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First Copy

A National Newspaper for Every Branch of the Industry

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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Free Wheeling Now Optional Equipment on Marmon '70' At Additional Cost of $35

Announcement of This New Feature to Dealers Results in Large Influx of Orders, George C. Tenney Says

INDIANAPOLIS, April 2.—Adoption of free wheeling as an additional feature on the new Marmon 70, making this car the lowest priced eight on the market with this device, is announced by George C. Tenney, general sales director of the Marmon Motor Car Company.

Free wheeling will be offered on the Marmon 70 as optional equipment at an additional list price of only $35, Mr. Tenney said. The regular list prices of the "70" begin at $950 for the two-passenger coupe, making the free wheeling prices of this car start at $985 f. o. b. factory.

Marmon 70 cars equipped with free wheeling transmissions already are in production, and a considerable number have been shipped, Mr. Tenney said. Announcement of free wheeling equipment to Marmon distributors and dealers only a few days ago has resulted in an immediate influx of orders, which will be reflected in increased factory shipments and retail sales, he declared.

"Free wheeling has been adopted

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W. L. COLT NAMED PRESIDENT OF N. Y. ASSOCIATION

NEW YORK, April 2.—At a meeting of the directorate of the Automobile Merchants Association of New York, Inc., held here yesterday, the officers were elected for the ensuing year. William L. Colt succeeds Lee J. Eastman as president, by reason of the unique circumstances existent in 1930.

The new president of the association has been an outstanding figure in the metropolitan territory for over twenty years. The Colt-Stratton Company, which he organized in 1909, was the first Dodge Brothers

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TO AUTOMOTIVE DAILY NEWS ADVERTISERS

BEGINNING today the advertising headquarters of Automotive Dailys News will be located at 350 Hudson St. All mail should be directed to that address.

Highlights in Annual General Motors Report

1. Illuminating comments by Alfred P. Sloan Jr. president, on installment selling relation between value and prices, the national automobile shows, wage scales and the current business recession.

2. Net sales in 1930, $983,375,137.

3. Net working capital on December 31, 1930, $281,037,636, a gain of $29,749,854 over the close of 1929.

4. Total current assets in course of year declined only $4,143,449, as against reduction in total current liabilities of $33,893,303.

5. Holdings of cash, government and other marketable securities in 1930 increased from $127,351,530 to $179,037,071.

6. Inventories were reduced in course of year by $52,174,108.

7. Investments in subsidiary and affiliated companies at close of year were $207,750,253, as against $207,270,443 a year before.

8. Total net earnings in 1930, $151,098,902.

9. Dividends paid in 1930 on preferred and common stocks, $140,038,662, leaving surplus of $11,060,330.

10. Bonus awards for conspicuous service in 1930 totaled 117,824 shares of Class A stock of General Motors Management Corporation.

MARCH PRODUCTION OF SOME CARS EXCEEDS THAT OF 1930; BETTER FEELING IN DETROIT

Studebaker, Buick and Cadillac Report Output Ahead of Year Ago; Reo and Hudson in Sharp Gains

DETROIT, April 2.—As reports of automobile production for March continue to pile up, it becomes apparent that that month was a satisfactory period for the industry, with the output of more than one company not only topping February of this year, but exceeding the corresponding period of 1930.

There is much cheerfulness here as a result of the good March showing as there is an inclination in the industry to accept the fine upturn in production as being the direct result of a corresponding increase in retail sales.

As reported in the preceding issue of Automotive Daily News, the Buick Motor Company in March turned out 10,550 cars, which total not only exceeded the 7,907 in February, but was greater than the 8,760 units produced in March, 1930.

Now come Studebaker and Cadillac with reports showing production and shipments greater than a year ago.

Reo and Hudson report sharp upturns in production in February.

STUDEBAKER

South Bend, April 2.—March shipments of Studebaker cars were 7,011, making it the biggest month since last September, as against 6,312 last March, an increase of 11 per cent., and 4,259 in February this year, an increase of 64 per cent.

Unfilled orders on hand on April 1, exceeded figures of any month during the past year. Factory stocks of new cars are at the lowest point in many years and dealers' stocks are much below last year.

REO

Lansing, Mich., April 2.—Reo reports shipment of 1,201 cars and trucks in March, of which 445 were Reo speed wagons. This compares with 806 cars and trucks in February. The company started April with unfilled orders for 946 units.

(Continued on Page 9)

STUDEBAKER NOT TO OFFER MID-YEAR MODELS IN '31

South Bend, Ind., April 2.—A. R. Erskine, president of the Studebaker Corporation of America, today made definite announcement that Studebaker "will have no mid-year model changes in 1931."

This step, Mr. Erskine said, was taken in accordance with the recommendation of the N. A. C. C.

Mr. Erskine recently approved the N. A. C. C. suggestion, but this is the first definite announcement that Studebaker would fall in line this year.

Car Makers Giving Best Values In History of Industry—Sloan

NEW YORK, April 2.—If other industries will follow the lead of the automotive industry in giving more quality for less money, the beginning of business improvement should be established, Alfred P. Sloan, Jr., president of General Motors, declares in a statement accompanying the twenty-second annual report of the corporation to be submitted at the annual meeting of stockholders on May 5. Copies of the report are being mailed to stockholders today.

"Never before have such great values in motor cars been available for so few dollars," says Mr. Sloan. "The automotive industry has maintained, in fact more than maintained, the consistent policy which it established from the beginning, of constant progress in the form of greater values. It is to be hoped that other industries will follow this example. If so, the beginning of a business improvement should be established and General Motors will

(Continued on Page 4)

W. J. LINN VICE-PRESIDENT OF CLEVELAND EXPORT CLUB

Cleveland, April 2.—William J. Linn, export manager of the Cleveland Pneumatic Tool Company and the Cleveland Rock Drill Company, associated concerns in the manufacture of all kinds of pneumatic-operated tools, machinery and accessories for the automotive, aeronautical, oil, mining and other industries, has been named vice-president of the Cleveland Export Club.

Late News Flashes

Edgewater, N. J., April 2.—Assessment of Ford Motor Company plant here is raised to $3,258,750 from $2,258,750 by Bergen County Board of Taxation.

* * *

Buffalo, April 2.—At the annual meeting of stockholders of Pierce-Arrow Motor Car Company the directors were re-elected.

* * *

Cleveland, April 2.—Mullins Manufacturing Corporation has declared the regular quarterly dividend of $1.75 on the preferred stock, payable May 1 to stock of record April 15.

* * *

Cleveland, O., April 2.—White Motor Company, including undistributed profits of subsidiaries, 1930 net loss $83,774 after charges, against profit of $2,875,363, or [illegible] a share in 1929.

* * *

Youngstown, O., April 2.—Republic Steel Corporation has relighted two open-hearth furnaces at the Bourne-Fuller plant in Cleveland, producing steel at the works for the first time since June, 1930.

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Major Specifications and Mechanical Details of Commercial Cars Pages 8, 9, 10

Nebraska Truck Sales Reported Showing Gains

LINCOLN, Neb., April 2.—Truck sales, which have held at a seasonally low levels all winter, are beginning to pick up somewhat in Lincoln and territory. This revival in truck sales has started about two or three weeks earlier than for a year ago, despite the tendency of commercial truckers to hold off buying until the results of regulatory and tax measures now pending in the state Legislature are known.

A moist March following an abnormally dry winter has given an impetus to the sale of farm trucks, as indicated by a brisk increase of sales of two to three ton trucks in the more rural section of Nebraska. Lincoln truck dealers predict a material increase in farm sales this year over last year, in view of an excellent crop outlook and the great improvement of banking conditions.

The movement of light commercial jobs and one-ton trucks has also improved slightly in March over the past two months, with the bulk of these sales being distributed among Dodge, Ford, Chevrolet, Studebaker and International. There has been a decided tendency among department stores and other operators of light commercial fleets to make replacements this month, especially during the latter part of the month.

E. C. Bailey, manager of the Woods truck division of the Arrow

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Truck Industry Needs Chassis Weight Standard—Page

Free Wheeling Now Optional Equipment on Marmon '70'

(Continued from Page 1)

on our Model 70 because of its many advantages in the way of performance and economy," Mr. Tenney said. "It is apparent that free wheeling is being regarded as one of the most desirable features on 1931 automobiles. The free wheeling adopted by Marmon is of the most approved type with positive gear control."

The Marmon 70 is an 84-horse power straight-eight, with such features as double-dome combustion, giving 10 per cent. more power; an improved cam and lever steering system, a new steering stabilizer, eliminating tramp and shimmy, and large improved self-energizing mechanical brakes. The "70" is the lowest priced car in the 1931 Marmon line, which also includes the new Marmon 88, a straight of 125 horse power, and the Marmon Sixteen.

NEBRASKA TRUCK SALES IMPROVE ON BETTER CROP OUTLOOK

(Continued from Page 1)

Aircraft and Motors Corporation, reports an increase of approximately 50 per cent. in truck sales in March over February and January. The bulk of the Woods truck trade this month has been in 2-ton, 2½-ton and 3-ton jobs with an unexpectedly large number of sales to commercial truckers and farmers. More than 50 per cent. of the sales in March has been of this type, with the remainder going to large corporation-maintained fleets. The sale of Patriot commercial truck bodies, manufactured by the Arrow corporation, has held at about 15 percent. higher in volume this month as compared with March, 1930. Most of the body business is accounted for by dealers who are stocking up for the spring trade, although the number of direct-to-consumer sales has been higher than a year ago.

Truck sales increased slightly in March over the three preceding months for the Rogers Motor Company, Ford dealer, but the movement of trucks, generally speaking, was still dull, according to H. E. Van Burg, sales manager. Indications for spring business to materialize in April and May are very good, however.

The sale of new trucks in March has been exceptionally good for the DuTeau Chevrolet Company, while used trucks have been moving fairly well, reports B. Merner, sales manager. The increase of truck sales in March came more or less as a surprise for this company, as spring truck buying was not expected to pick up to any extent until April 1.

N. S. Strom of Johnson & Strom, Dodge distributors, reports very good truck sales in March, with new trucks moving considerably better in proportion than new passenger cars. This condition was evident among the company's dealers in eight counties surrounding Lincoln. Mr. Strom notices a tendency for the buyers of the larger trucks to hold off pending a settlement of the legislative regulation, but he does not anticipate that the present session, which is expected to adjourn late in April, will do anything to materially injure the truck business. The Dodge truck parts and service business has been very good in March.

The lighter G. M. C. models showed a marked increase in number of sales during the latter part of March, according to H. S. Galloway, sales manager of the Lincoln Buick Company, but the bigger jobs have moved very slowly. The truck parts and service business has been excellent for this company in keeping with the general trend in Nebraska for the month.

A newcomer to the Lincoln territory, the Federal truck, has made its debut in very satisfactory manner, according to the Wetherell Motor Company, which took over the distributorship late in February. This truck has not had time to work up a large clientele in Lincoln, however, and Wetherell officials look for a very good sales period in June and July when the heavier trucks normally start moving.

International trucks in Nebraska have been riding the crest of the truck sales acceleration in March, with this make very near the top of the list of new trucks registered in Lancaster county in March.

APRIL AUTOMOTIVE IMPROVEMENT AIDS MIDWEST STEEL PLANTS

Youngstown, O., April 2—Steel makers in the Midwest advise that new business is in moderately better volume than heretofore. This applies to a wide range of products, principally the automobile industry. Motor production is expected to show an upturn in April, and this broadened production will require additional tonnages of steel.

Severn P. Ker, chairman Sharon Steel Hoop Company, states new business has come forward the last three months in slightly increased volume. At present the company is affected by a temporary lull, although it has considerable automobile business on its books. Its principal fabricating interest, Youngstown Pressed Steel Company, at Warren, is likewise enjoying a better run of business than heretofore, and is requiring larger steel tonnages.

Sharon Steel looks for better business in the second quarter, but reports the outlook for the second half as clouded and uncertain. Mr. Ker believes, however, that the last half will develop slow beterments in sales.

Construction requirements involving steel supplies will be larger this spring and summer than is generally appreciated, according to some district observers. Involving the heavier products, such needs will run to the heavier steel tonnages.

Failure of new steel pipe demands to develop in the volume indicated earlier in the year is a disappointing factor, so far as the valley is concerned.

FORD PRODUCING PARTS IN CALIFORNIA PLANT; PAY ROLLS ARE INCREASED

Long Beach, Cal., April 2.—Actual production in the new pressed steel unit of the Ford Motor Company plant started March 30. For the first time in the history of the company, parts were manufactured outside Detroit. All pressed steel parts used in the Ford will be manufactured at the local plant. Heretofore, they have been shipped to the local assembly plant from the East.

With the beginning of manufacturing operations additional men were employed and ultimately the plant will employ 640 men.

The last ten days of March, according to officials, were the best the plant has enjoyed since its establishment, from the standpoint of sales. Production was stepped up several times during March.

AIR TRANSPORTATION SHOW INCREASE IN 1930

Washington, April 2.—A total of 417,505 persons were passengers on the domestic and foreign scheduled air lines of American operators during 1930, more than twice as many passengers as were carried by the scheduled air transport companies in 1929, it was announced today by the aeronautics branch of the Department of Commerce upon completion of its survey of operations for the last half of 1930.

The miles flown in 1930 were 36,945,203, an increase of more than 10,000,000 over 1929. Mail carried in 1930 amounted to 8,324,255 pounds, and express was 2,869,255 pounds, both figures representing substantial increases over the previous year.

W. L. COLT NAMED PRESIDENT OF N. Y. ASSOCIATION

(Continued from Page 1)

dealer in New York city. In 1917 he retired from that company to join the Willys-Overland Company and served with that organization as eastern division manager for five years. He then formed the Colt-Stewart Company, which handled the Chrysler franchise and from which Mr. Colt retired in 1928. He is now president and general manager of Dodge Motors, New York, Inc.

C. B. Warren of the Warren Nash Motor Corporation is the first vice-president of the association. Mr. Warren has served as an executive in the metropolitan territory since 1913, at which time he joined C. W. Nash as general manager of the General Motors Truck Company. When Mr. Nash manufactured his own car, Mr. Warren was given the choicest territory, and in 1917 organized the present Warren-Nash Motor Corporation. Recently Mr. Warren was elected a director of the Nash Motors Corporation.

Herbert Happersberg continues as second vice-president of the association. He is also the vice-president of the Relay Motors Corporation. Before the merger with the Relay Motors Corporation he was the Garford representative, and is

WILLIAM L. COLT

very active in the motor truck field. As second vice-president and director of the Automobile Merchants' Association of New York, Inc., since 1925, Mr. Happersberg has served on various committees, including traffic, membership and motor truck division.

Nineteen thirty marked the end of J. B. Hulett's fifth year as secretary and treasurer of the association. George Stowe is the new secretary and treasurer of the association. Mr. Stowe came to New York from Boston in 1909 when he became the vice-president and general manager of the Chalmers Motor Car Company. He continued in that position until 1916 when he became president and general manager of the Mitchell Motor Car Company. He acted in that capacity until August, 1921, when he accepted the vice-presidency and general managership of the Reo Motor Car Company of New York, Inc., which position he now holds.

According to the by-laws of the association, no president may succeed himself, but may again serve after a number of years have intervened. It is interesting to note that William L. Colt served as president during 1925, George Stowe during 1926 and C. B. Warren in 1928.

The directorate of the Automobile Merchants Association of New York, Inc., for 1931 also includes: R. B. Cole of the Hudson Motor Car Company, Lee J. Eastman, Packard Motor Car Company of New York; E. W. Headington, Stutz New York Company; C. H. Jennings, C. H. Jennings Corporation; C. H. Larson, Cutting Larson Company; Theodore Luce of Theodore Luce, Inc.; Guy Simons of Simons Stewart Company, and A. G. Southworth of Glidden Buick Company.

Harry G. Bragg continues as general manager. Herbert G. McLear continues as counsel.

SPARKS *from* DETROIT

The Reunion of Murphy and Foy

* * *

Taxing America's Future

* * *

Knute Rockne

* * *

Chris Sinsabaugh—Detroit Editor

FOUR years back and Frank Murphy, a young Federal district attorney, and Byron Foy, an automobile salesman, were roommates in Detroit—they had been buddies for three years. The other night at the Statler there was a reunion at the De Soto banquet. Foy was the guest of honor, the dinner marking his first appearance before the dealer body as president of the De Soto Motor Corporation, a powerful unit of the Chrysler Corporation. Next to him sat this Frank Murphy, now mayor of the fourth largest city in the United States.

No wonder they got sentimental, these two, with Foy telling stories about the old days when he sold Reos, while his roommate was steadily climbing up in his profession, stepping from Federal district attorney to become a judge, then mayor. And when it came time for his honor to talk we all listened while he said nice things about his buddy, told a few anecdotes himself, and spoke in highest terms of the ability and clean-cut business methods of the Chrysler personnel in general. With him this wasn't just another banquet for the mayor to attend—it was the high point in the career of his old roommate.

* * *

THE Foy inaugural was marked by the attendance of the official family. Presidents of the four Chrysler units were there—Joseph Fields of Chrysler, K. T. Keller of Dodge, Byron Foy of De Soto and F. L. Rockelman of Plymouth, with Roy Peed, De Soto general sales manager, wielding the gavel.

President Foy wore his new honors gracefully, impressing his hearers with his modesty and sincerity. There was no questioning the very evident fact that he knows his way about in the automobile industry. The debut was an unqualified success.

The democracy of the new chief was brought out when he confessed that that afternoon he had played Harun-al-Rashid at the plant. Unknown to most of the 300 dealers who had gathered for the driveaway, he mixed with the visitors when they were viewing the sights in the factory, passing himself off as one of them. In this way this automobile caliph secured a lot of first hand knowledge about dealers' problems that is going to be mighty useful to him from now on.

* * *

IN "Shall We Tax America's Future?" an article from the pen of Martin Pulcher, president of Federal Truck, this interesting observation is made:

"Without recognition of the indispensable service of the motor truck, certain powerful agencies are vigorously promoting legislation designed to further increase the already burdensome taxes which have been levied on commercial haulage equipment.

"Strange as it may seem, these agencies enjoy a considerable volume of business from the manufacturers of motor trucks, and they could not fail to suffer an unfavorable reaction from any injury inflicted on the truck industry.

"Stranger, too, is the fact that these agencies are themselves users of motor trucks, and their activities in this direction are sure to increase in years to come. This places them in the inexplainable position of trying to build up a tax which they shall, in their own interests, be forced to endeavor to tear down later on."

After making out an excellent case for the motor truck more than holding up its end in taxation, Mr. Pulcher scores again when he says that taxing the motor truck is taxing your bread and butter. "Virtually everything you eat and wear—every necessity of life—depends upon the truck," he says. "This means that if some of the proposed legislation against motor trucks is permitted to become actual laws, every consumer will certainly be brought face to face with higher cost of living."

* * *

WE, with others in the industry, bow in deepest grief for the passing of a gallant gentleman, Knute Rockne, killed in the airplane accident in Kansas, while he was flying to the Pacific Coast in the interests of the house of Studebaker. The passing of the famous football coach followed last week's announcement of his appointment as head of Studebaker's sales promotion department, a connection that was interpreted to mean that Rockne had definitely decided to ally himself with the automobile industry after he had finished his gridiron work.

Truck Chassis Weight Standard Need of Day

INDUSTRY'S LEADERS SUGGEST METHODS OF DETERMINING BONAFIDE WEIGHTS

AT the present time there is no standard under which chassis weights are determined and published. The nearest approach to anything of the sort is the caution plate adopted by the National Automobile Chamber of Commerce for the use of its truck members. This plate embodies a note to the effect that: "Chasis weight includes complete chassis, front fenders, step, driver's seat, tools, lamps, horn, license brackets, normal quantity of fuel, lubricant and cooling medium; but without driver, body, auxiliary power devices or equipment."

This is a very satisfactory line-up for determining chassis weights, but it has one major fault. It is not a standard, adopted and adhered to by all manufacturers in publishing weights of their various models. The plate is filled in by the dealer, not the maker. It may be that the dealer will put on heavier wheels than standard or make other changes that will give a considerable variation from the normal weight of the vehicle as it comes from the factory.

The Automotive Daily News believes that there is real need for a definite standard for chassis weights, particularly for publication purposes. This paper submitted proofs of the editorial reproduced on this page to a number of its readers engaged in the manufacture of motor trucks, asking them to comment on our proposal. Almost without exception the reaction of the manufacturers was favorable, as will be noted in the letters that follow. We would be glad to hear from other readers, particularly from dealers handling truck lines, giving us their frank opinions to be published in Automotive Daily News.

There Should Be a Measuring Stick

I READ your "Truck Chassis Weights" article. What confuses the public more than anything today is: What is a 1-ton truck? I have been trying for a long time to get the N. A. C. C. to work out a formula for truck capacities, and I have met with no success. I am now talking with the S. A. E. on the same subject.

With every manufacturer taking it upon himself to rate his own chassis, we get the following results:

A. A truck weighing 2,300 pounds, selling for around $500, rated 1½ tons.

B. A truck weighing 2,400 to 2,500 pounds, selling for approximately $500, rated 1½ tons.

C. A truck weighing 3,200 pounds, selling for approximately $700, rated 1½ tons.

D. A truck weighing 3,600 pounds, selling for $1,650, rated 1½ tons.

E. A truck weighing approximately 4,500 pounds, selling for $3,500, rated at 1½ tons.

What chance has the poor public with a set-up of this kind? There should be some measuring stick to define truck capacity. A request for bids came into our office the other day for twenty trucks, maximum capacity of vehicle, 9,000 pounds; truck must weigh a minimum of 4,200 pounds. In other words, the truck must carry twice its weight, which is, of course, impossible.

Going back to your problem, I think a truck should be rated on the basis of water, oil and gas ready for the road. Sometimes there is one driver and sometimes two. Cab should be eliminated, because many times a body is built with a driver inclosure integral with a body and it weighs less than a straight cap equipment.

The question of total gross has come into the picture in the last few years. Some manufacturers are using chassis capacity, some use total gross and some use both. We also have one manufacturer who gives one chassis four different capacities by tire changes only.

And when we get all through the public is badly confused. There is an ever-increasing tendency to raise chassis capacity without putting anything more in the chassis, which is bad business. While business is so competitive, it is impossible to get manufacturers together to talk very intelligently on any subject pertaining to motor trucks. I have felt for a long time that the truck manufacturers should be closer together and that we should get under better control many of the things in the business that are seemingly causing us a lot of trouble. I am quite sure that many of the difficulties will disappear as business gets on a better keel again. During these times of depression all merchandise is more or less on the "gyp counter."

M. L. PULCHER
President Federal Motor Truck Co.

Agrees With Us on Chassis Weight Plan

I THINK the article is O. K. in every respect and hope it results in solving the chassis weight problem.

T. R. LIPPARD, President
Stewart Motor Corporation

Thinks We Are on The Right Track

WE approve the article as submitted and believe you are on the right track to correct an evil that has been in the industry for a long time. We have no suggestions to make that will improve the position you have set forth in this article

W. F. McAFEE,
International Harvester Company.

Says Movement Is In Right Direction

I AM in receipt of your favor inclosing proof of your editorial in regard to the standardization of truck chassis weights. I think this is a move in the right direction, and if you will accept a suggestion from me, I believe that the Truck Standards Division of the Society of Automotive Engineers could do a very wonderful work in co-operation with you along this line.

C. B. ROSE, President
La France-Republic Corporation.

Should Cowl Weight Be Added to Chassis?

WE HAVE your letter, and your idea of weight standards agrees exactly with our own, and it would be a splendid thing if this could be established. The weight of the cab should not be given as a part of the weight of the chassis.

There is just one little question that comes to my mind: Should the weight of the cowl be given with the weight of the chassis? If the weight of the cab is given separately the combined weight of the chassis and cab would be the weight of the chassis as given, plus the weight of the cab less the weight of the cowl. Perhaps the weight of the chassis should be given with neither cowl nor cab, and then the separate weight of the cowl and cab stated so that any combination can be arrived at.

G. A. GEMMER,
Chief Engineer National Motors Manufacturing Company.

Truck Chassis Weights

THE motor truck industry needs the establishment of a definite standard for the determination of chassis weights. At the present time chassis weights are quoted by the various manufacturing companies, but they are based on so wide a variety of equipment that the figures are not even approximately helpful.

Chassis weights as they are published today may be taken with the cab in place. They may include the weight of a spare tire and rim. They may embody the weight of water, fuel and oil and in some instances they include other entirely extraneous equipment. Some companies give weights for their vehicles ready for the road. This will include the chassis proper, with gas, oil and water on board, a cab, a spare tire and even the driver.

In this way the given chassis weights for vehicles that embody precisely the same units, from stem to stern, may vary by 1,000 pounds or more. In fact with heavier vehicle units, which have larger and more elaborate cabs, the difference in weight might run over a ton.

This question of chassis weight is important. A difinite standard in the publication of these weights would work to the advantage of manufacturers, dealers and the truck-buying public.

Automotive Daily News desires to make a start toward the evolution of a chassis weight standard. Its suggestion is that the weight given by the manufacturer be standardized on the actual weight of the chassis itself, with gas, oil and water on board and a spare tire and rim in place. We suggest inclusion of the spare tire and rim, because the device for carrying these is, in most cases, an integral part of the chassis. It will be noted that we do not include the weight of the cab, and this is a logical manner of handling this part of the structure. On many of the lighter units the cab and body are integral. It would be impossible to weigh the chassis with a separate driver's compartment and it seems more logical to eliminate the cab from all units, light or heavy.

With all the standardization that has gone forward in our industry in the course of the last few years, it seems strange that nothing definite has been done on this matter of setting a defnite standard for truck chassis weights. The matter of weight in a truck is vitally important. Buyers want, or at any rate should want, to know the exact weight of the vehicle they are considering purchasing. They should want to make comparisons with other units that may be under consideration and they need definitely to know just what the weight figure means. If these figures vary hundreds of pounds, they are obviously not much of a guide for the prospective customer.

Automotive Daily News would like to have the comments of its readers in both the manufacturing and dealer branches of the truck industry. Any suggestions will be given earnest consideration, as regards the equipment that should be included in the chassis weight figure.

The above editorial was submitted to leaders in the truck industry for their comment and suggestions. Their answers are published on this page. Your own views on their question will be appreciated.

Would Omit Gas and Water From Weight

YOUR letter to our Mr. Scott has been referred to me, and would state that your effort to establish a standard for truck chassis weights is to be commended, and we will be be very glad to see something of this kind worked out.

You ask us for suggestions, and would suggest that the weight of a chassis should include the actual weight itself, spare rim, tools and oil in motor, transmission and axle, but should not include the weight of gasoline and water. This would then make the chassis weight the same as the shipping weight and would cut out some chance for confusion.

As you probably know, some of the states have regulations setting forth what the chassis weight includes, and this usually takes care of the matter whether the cab is included or not. As stated above, we believe the shipping weight and the chassis weight could be the same and would eliminate some chance for confusion.

H. R. THOMAS,
Chief Engineer Reo Motor Car Company.

Claims Two Weights Should Tell Story

IN response to yours addressed to W. G. Hahn, both Mr. Hahn and the writer think your points regarding truck chassis weights are well taken.

One way to get a true chassis weight would be to have two different listings. First, the chassis weight stripped, without cab, tools, spare tire or rim, gas, oil or water. Second, the chassis weight with cab and full equipment, but minus body.

If this could be accomplished, it would tell the "Dear Public" quite a story.

L. K. GORDON, Vice-President,
Selden-Hahn Motor Truck Corp.

Believes Subject Very Opportune

I HAVE your very interesting letter inclosing proof of an article concerning a standard for chassis weights. I believe it is very opportune and consider that you have covered the subject thoroughly.

L. A. MILLER, PRESIDENT,
Willys-Overland Company

Asks for Standard Tonnage Rating Also

I AM very pleased that you are beginning to take up the battle on standardizing chassis weights, and I think we should go further, and also try to get some kind of tonnage rating. As you know, I was present when the motor truck was born in this country, and I have seen its ailments all this time and, frankly, it has been getting worse instead of better.

Coming back to your editorial on chassis weights, you are absolutely correct and should be defined without any cab, but including the cowl. In other words, it should be everything complete in runable condition, but without any cab or body. Therefore, since you have to have gas and water to drive it on a scale, it should include the tanks full, also your tool and your tire carrier and spare tire, but not the driver, because the vehicle can be weighed without him. He is not necessary except in its operation.

The chassis weight difficulty was due to our different state laws, and gets back to the question of salesmen, and even manufacturers being willing to condone any kind of misinformation that will increase their sales.

We have always tried to publish absolute correct information, with the result that I know of definite instances where we have lost out on sales just because our specifications and weights listed were accurate, while our competitors' were not.

An example was the letting of some state bids. We were eliminated and I determined to make a fight and I took it up from the purchasing department to the governor. I was referred to the state engineer who informed me that my chassis weights were too light. I was satisfied this was a lot of camouflage to cover up his placing orders with other concerns, and I demanded a showdown; and when his tabulations proved that our motors were larger, consequently the radiators larger, that our axles were heavier and that there could be no question but what our chassis were heavier, I carried the matter to the government and got a substantial order.

B. A. GRAMM,
Gramm Motors, Inc.

Glad to Co-operate For Standardization

YOUR letter to K. T. Keller has been referred to the writer. We have carefully gone over your suggestions and recommendations for the standardization of specification information particularly with respect to truck weights. We heartily agree with you as to the desirability of such uniform practice. We will be glad to co-operate in any way we can in a program of standardization, providing, of course, such a program will meet all of the more or less varying requirements of state authorities with relation to this subject.

We feel that your move towards this standardization is an extremely constructive one.

ROBERT L. BIGGERS,
Dodge Brothers Corporation.

DE VAUX-HALL ADDS TWO DISTRIBUTORS IN NEW ENGLAND STATES

Grand Rapids, April 2.—Two more important distributorships were reported closed today by R. H. Mulch, general sales manager of De Vaux-Hall Motors Corporation, who is at present introducing the De Vaux car to various dealer organizations in the East.

The distributors taking over the De Vaux line are Reo Motor Company of New England, Boston, and the Augusta Motors Company of Augusta, Me.

The Kuennen Motor Company, the Grand Rapids distributor of DeVaux cars, reports the addition of the following two dealers:

Art Cook Motor Sales, Greenville, Mich., and American Motors, Inc., Grand Rapids, Mich.

The R. H. Collins Automobile Company, Chicago distributor of the De Vaux, reports the adidtion of the following dealers to its comprehensive list:

Rodeghier Motors, 645 East Jefferson St., Joliet, Ill., and Pronger Brothers Motor Sales, 380 Western Ave., Blue Island, Ill.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

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AUTOMOTIVE DAILY NEWS PUBLISHING CORPORATION,
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FRIDAY, APRIL 3, 1931

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Ask 'Em to Buy?

IT is almost a fundamental of good merchandising to "ask 'em to buy." In the automotive field we have made somewhat of a fetish of solicitation, and we were right.

Almost every rule has its proof in the form of successful contradiction. We recently came upon a seeming exception to this fundamental of asking possible customers to buy. This exception took the form of a used car department operated pretty definitely on the "serve yourself" system. That the plan was suited to the conditions in that particular shop is proved by the fact that the dealer increased his sales of used cars threefold after he started to use it.

Under this "help yourself" plan, every used car on the floor was plainly marked as to price, model, year, mileage and the other vital statistics that a used car buyer should want to know. Prospective customers were greeted on entering the shop and were then permitted to roam at will among the exhibits, examining, trying and generally "looking." There were always salesmen on hand, but they only approached the customer when he showed signs of wanting further information or help beyond the plainly marked statistics on the cars.

As a matter of fact, after we examine this plan and analyze it, we find that it is still asking them to buy, but done a little more diplomatically than usual. The detailed price and information tags on the cars are asking them to buy via eyes instead of ears. When the eye has done its work, the salesman steps forward and completes the job of selling in the usual way.

Dealers should learn the lesson that there are many ways of asking customers to buy, outside the conventional chatter of a salesman.

License Numbers

IN this country, with its 26,000,000 motor vehicles, the problem of keeping license plate legible to perform their obvious function has become a considerable worry to motor vehicle commissioners. There are now five or six states where motor vehicle registrations exceed the million mark. License plates numbered consecutively from one to the final number would bear in many cases seven figures, while six figures would be the rule.

Of course, the prime object of number plates on motor vehicles is for purposes of identification. With six or seven figures strung out across the plate, it would take a photographic brain to get the number right in cases of accident. A number of states now use letter classifications with the figures and this helps somewhat.

Connecticut seems to have evolved a better system than any now in use and it will be applied to the state's 1932 number plates. The first plates issued will bear numbers from 1 to 9,999. After the latter number, however, letters will be used. There will be plates bearing the sign A-1 to A-999. Then will come AB-1 to AB-999; AC-1 to AC-999, etc. This ought to make legible plates, readily distinguishable and serving their obvious purpose. Incidentally the plates will be smaller than those now in use, saving the motor vehicle department a considerable sum in mailing expenses.

In a recent folder issued by the American Automobile Association, it is stated that in various states automobile taxes are being diverted to such uses as: Fish hatcheries, oyster conservation, state departments other than highways, state buildings, property tax reduction, harbor expenditures, charitable institutions, water supply systems and schools. Now all of these are worthy objects for improvement and development, but automobile taxes are class levies on one particular form of activity. Money taken from this class of the taxed should be spent only for highway improvement and development.

Sloan Sees Lower Prices As Real Aid to Recovery

(Continued from Page 1)

have played a leading role in this regard.

"The thought has been advanced by many authorities, entirely within reason, that the automotive industry will lead the way to business recovery. Irrespective of whether this may or may not be true, it is nevertheless a fact that the economic situation through which we are now passing will demonstrate that the automotive industry is built upon a foundation of necessity; that it compares favorably with any other industry, and that, therefore, it is entitled to and will receive equal recognition in the future."

Mr. Sloan in his statement touches on a number of subjects of especial interest in the automotive industry at this time, including the value of the annual New York and Chicago automobile shows, the wisdom and economic soundness of installment selling, the wage scale, the current business depression as a test of management and various items in direct relation to General Motors.

Regarding the motor car shows held each year under the auspices of the National Automobile Chamber of Commerce, Mr. Sloan says in part:—

"At the close of each year, or, more accurately, at the beginning of each new year, it is the custom of the automotive industry to exhibit its products in a National Automobile Show held in New York, and another somewhat later in Chicago. It is interesting to note two facts conspicuously evident as a result of these exhibitions, especially so in view of the economic situation existing.

"One is that the interest of the public is substantially undiminished. The other, and perhaps the more important, is that the automotive industry has succeeded in establishing a higher relationship between value and price than ever before. Its current offerings are unquestionably compelling bargains. Never before have such great values in motor cars been available at so few dollars."

In regard to installment selling, Mr. Sloan has the following to say:—

"Although the trend of opinion in recent years has been toward a general acceptance of the economic soundness of installment selling or consumer financing, yet there has been in the minds of many the question as to whether in periods of general industrial recession it would entirely justify itself. Therefore, in view of the fact that such a state of affairs existed in acute form during the period under review, there is offered an opportunity of dealing with that question.

"The experience of 1930 demonstrates beyond any question of doubt the ability of the average individual to meet the obligations incurred. While losses have been somewhat increased percentage-wise, while repossessions of cars have likewise increased, and while special efforts have been made to assist individuals to carry through to completion their contracts in one form or another, yet after all the fact is demonstrated, and in an outstanding manner, that looking at the proposition from a broad standpoint, a sound foundation of credit exists. There should no longer arise any uncertainty in the minds of even the most skeptical who will examine the facts, that granted sound policies and effective management, consumer credit has completely justified itself."

Mr. Sloan commented on operations of General Motors since the beginning of the current depression in 1929, including the corporation's policy on wages, in part, as follows:

"Outside of adjustments, which are more or less continuous, irrespective of times or circumstances, the corporation did not alter the wage scale during the year 1930. The standard of salary and wage scales has been maintained at the same level as during the previous year. Industry as a whole is dependent upon the purchasing power of the individual now more importantly than ever before. It is of prime importance that the spread between the cost of the necessities of life and the income of the individual should be maintained in order that there may be available purchasing power for the conveniences of life, in the production of which there is afforded employment for many."

Mr. Sloan sees in the present business condition a real test of industrial management.

After relating how the corporation made various adjustments in line with other companies to place it in a position to withstand the recession, Mr. Sloan declared:—

"The ability of the management to cope with these problems and the soundness of the corporation's operating policies were put to a real test. As such conditions afford a far more effective yardstiek for measuring real worth than times of prosperity, the twenty-second annual report should be of unusual interest to its stockholders."

That report shows net earnings for 1930 of $141,616,131, as previously reported by Automotive Daily News, out of which was paid $140,038,662 in dividends. Not included in the $141,616,131, however, was an item of $9,482,861 which represented non-operating and non-recurring profit from the sale of General Motors common stock to the General Motors Management Corporation. That brought total net earnings to $151,098,992, equivalent after paying dividends on the preferred stocks of $9,538,660 to $3.25 a share on the common stock. The dividend requirement on the common stock was $3. After providing for all dividends there was left out of earnings for reinvestment in the business $11,660,330.

These figures, although lower than in the abnormal year of 1929, represent the largest earnings of any corporation in the world and are evidence of the strength of the management of General Motors through a period of depression.

Net sales, excluding intercompany and interdivisional transactions, amounted to $983,375,137 last year, as against $1,504,404,472 in the preceding year, a decline of 34.6 per cent.

Net working capital of the corporation as of December 31, 1930, was $281,037,636, a gain of $29,749,854 over the $251,287,782 at the close of the preceding year.

Total current assets at the close of 1930 were $364,817,496, as compared with $368,960,945 at the end of 1929, while current liabilities were $83,779,860, as against $117,673,163 at the close of 1929.

Holdings of cash, United States government and other marketable securities as of December 31, 1930, amounted to $179,037,071, as compared with $127,351,530 a year before.

Inventories were reduced by $52,174,108 during the year 1930.

There was allotted for the year 117,624 shares of Class A stock of General Motors Management Corporation as bonus awards to employees for conspicuous service.

Investments of General Motors in subsidiary and affiliated companies not consolidated in the accounts of the corporation at the close of 1930 amounted to $207,750,253, as against $207,270,443 at the end of 1929.

In general comment, Mr. Sloan in his statement declared that during the year two outstanding developments were announced by the corporation through Cadillac Motor Car Company. These were the production of the Cadillac V-16 and V-12 cars.

"Their advent," he said, "will have an important influence on the future trend of motor car design."

In conclusion, the General Motors president said in part:—

"The experience of the corporation's operating organization has been broadened through the problems that have arisen and have had to be dealt with under the unusual conditions prevailing during the year under review. The organization is stronger and better as a result of this experience. While the financial returns were disappointing as compared with the more favorable results of previous years, it must be recognized that performance under such circumstances cannot be measured quantitatively in comparison with previous years, but must be considered with regard to the circumstances prevailing.

"Irrespective of what conclusions stockholders may reach on that point the fact exists that from many fundamental standpoints the progress of the year was important and will have an influence on the future fully equal to years when the financial return was greater. Higher standards of efficiency with greater effectiveness have been established than ever existed before. The basis exists, therefore, for a more effective capitalization of the corporation's future opportunities, and the management has faith in the fact that the opportunities are as great as those of the past."

Reproduction of other interesting material from the corporation's annual report will be made in subsequent issues of Automotive Daily News.

COMING EVENTS

MARCH

30-April 3—**Indianapolis, Ind.** Eighty-first meeting, American Chemical Society

APRIL

11-13—**Seattle, Wash.** Washington Motor Freight Association convention.
11-19—**Detroit, Mich.** Aeronautical Chamber of Commerce convention.
16-17—**Milan, Italy.** International Automobile Salon
20-23—**Birmingham, Ala.** American Society of Mechanical Engineers, meeting.
28-May 1—**Atlantic City, N. J.** United States Chamber of Commerce, convention.

MAY

4- 9—**Charlotte, N. C.** Good Roads Convention.
4- 9—**Washington, D. C.** International Chamber of Commerce, convention.
7- 8—**Milwaukee, Wis.** Production meeting Society Automotive Engineers.
9-Aug. 9—**Berlin, Germany.** International Garage Exposition
13-14—**Tulsa, Okla.** American Petroleum Institute, first mid-year meeting, Mayo Hotel.
15-16—**Detroit, Mich.** Society of Automotive Engineers, nineteenth aeronautical meeting, Book-Cadillac.
27-29—**New York City.** National Foreign trade Council.

JUNE

8-12—**Chicago, Ill.** Radio Manufacturers' Annual Show.
15-18—**Madison, Wis.** American Society of Mechanical Engineers, Oil and Gas Power meeting.
14-19—**White Sulphur Springs, W. Va.** Annual summer meeting, Society of Automotive Engineers.
22-26—**Chicago, Ill.** American Society for Testing Materials, annual meeting

SEPTEMBER

26-Oct. 2—**Atlantic City, N. J.** Annual meeting, American Electric Railway Association.

NOVEMBER

10-12—**Chicago, Ill.** Annual meeting, American Petroleum Institute, Hotel Stevens.

R. M. MULCH VISITS NEW N. J. DISTRIBUTOR

Newark, N. J., April 2.—R. M. Mulch, factory sales manager of the De Vaux Motor Company, called on his local distributor, the U. S. Motor Sales Company, 493 Broad Street, here while passing through Newark last week. Mr. Mulch said that in the West and Middle West the De Vaux is developing one of the strongest dealer organizations in the automobile field.

MASSACHUSETTS CAR OPERATORS TO MEET

Boston, Mass., April 2.—Easter Monday night is announced as the date of the twenty-second annual ball of the Massachusetts Automobile Operators' Association, at Paul Revere Hall, Mechanics Building. Among the features will be the distribution of the annual year book. Invited guests include Gov. and Mrs. Ely, Lieut-Gov. Youngman, Hon. Alvan T. Fuller, Mayor Curley and other public officials, as well as officers of the Boston Automobile Dealers' Association.

CLEVELAND YELLOW CAB SETS SAFETY RECORD

Cleveland, O., April 2.—The Yellow Cab Company fleet of Cleveland traveled 6,499,308 miles during 1930 without a single taxicab fatality. The Yellow Cab of Cleveland is a unit of the Parmelee National Transportation System operating taxicab transportation services in New York, Chicago, Pittsburgh and Minneapolis in addition to Cleveland.

BARNEY OLDFIELD JOINS RADIO STARS

Chicago, April 2.—Barney Oldfield and Sousa and his band will be the entertainment stars on a special hour program with which Standard Oil of Indiana will undertake to attract a big radio audience at 9 p. m., Central time, Thursday, April 9.

Editorial Leadership

If something happens on Wednesday and a publication is printed on Wednesday, naturally it can record the news then. Otherwise it cannot.

Automotive Daily News is up to date because it is printed daily. It has a large staff of field men, a sufficient number of trained newspaper men in New York and Detroit, and uses all rapid facilities for gathering, printing and distributing the news of the automotive industry.

It goes further than speed. It keeps registration tables of passenger cars and trucks correct up to the day of publication. It prints specifications of cars that are in production, taking out those cars that have little or no distribution, or whose makers have gone out of business.

Every page of Automotive Daily News is of business value to the thousands of subscribers who pay $12 a year for it. In comparing the value of automotive mediums you must look to the editorial service which the mediums render. Editorial leadership means leadership in reader interest.

Advertiser is served best by the paper that serves best

We will be glad to give you tangible proof of the editorial leadership of Automotive Daily News.

Automotive Daily News

H. A. TARANTOUS, *Bus. Mgr.*

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J. Edward Schipper, Mgr.
Graybar Building
New York City

Production--Engineering--Factory-

Detonation Characteristics Of Some Aliphatic Olefin Hydrocarbons

By WHEELER G. LOVELL, JOHN M. CAMPBELL and T. A. BOYD,
General Motors Research Laboratories, Detroit, Mich.

The following is an abstract of a paper presented yesterday before the meeting of the American Chemical Society, now in session at Indianapolis, Ind.:

In a previous paper it was shown that paraffin hydrocarbons, those of which straight-run Pennsylvania gasolines largely consist, differ widely in anti-knock quality. Some are quite good in this respect, but others are very bad. It was shown then that there are certain definite rules for paraffin hydrocarbons, representing the relationships between anti-knock quality and chemical make-up. Those rules simply gave the way the gasoline engine classifies paraffin hydrocarbons, of the various molecular structures, for all the determinations upon which they were based were made directly in an engine.

Thus the gasoline engine is a chemist, and a very discriminating one. Knock is the language in which the gasoline engine reports that the make-up of a fuel is not what it ought to be. It is differences in the inside structure of fuel molecules that the engine senses, and those happen to be differences that the human chemist can sometimes find only with great difficulty, if at all.

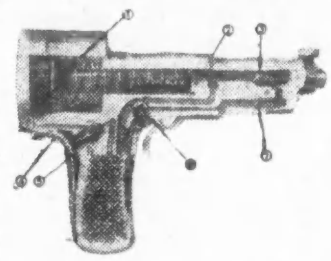
The average man probably thinks that if there is anything he is not concerned with it is the molecular make-up of the hydrocarbon molecules in his fuel. But that happens to be a thing which his engine is greatly concerned about. So, if the chemical structure of the fuel molecules is not what it ought to be, the driver of a car has to listen to his engine complaining about it every time he gets under way after a traffic light has changed, or every time his car is laboring up a hill.

The rules by which the engine classifies the aliphatic olefin hydrocarbons are now presented in this second paper. The olefins differ from the paraffins in having less hydrogen, the deficiency of hydrogen being made up by a double bond or double chemical linkage between two of the carbon atoms in the molecule. Information about the relationship of chemical make-up to anti-knock quality for olefin hydrocarbons happen to be of great practical importance, because in gasolines made by cracking—and more than a third of our gasoline is now made by cracking—olefin hydrocarbons are present in considerable amounts. If knock-free fuels are to be made by cracking, some way to control the chemical make-up of the hydrocarbons produced will have to be found. The difference in anti-knock quality between the best and the worst of the fuels in general use today is very small indeed compared with that between two olefins hydrocarbons that otherwise are almost identical.

The results of this engine classification of olefins show, first of all, that, just as in the case of the paraffins, anti-knock quality improves with decreasing molecular size or length of carbon chain, with number of methyl groups added to a carbon chain of given length, or with the closeness of centralization of the molecular structure. But with the olefins there is a second variably factor—namely, the double bond, already mentioned. The introduction of a double bond into a paraffin hydrocarbon of any given structure, thereby making an olefin out of it, improves its anti-knock quality to a large degree. The actual degree of improvement varies, however, with the point in the molecule at which the double bond is introduced or located. The most important of the rules relating to the location of the double bond is that the closer it is moved to the center of a hydrocarbon molecule or of a carbon chain the better the anti-knock quality becomes. Tendency to knock is thus roughly determined by the length of the longest saturated carbon chain, or chain unbroken by a double bond.

There are also the di-olefins, which are hydrocarbons that have not just one, but two double bonds in the same molecule. For any given molecular size and arrangement of its carbon atoms a di-olefin is better in anti-knock quality than an olefin. Also, with the di-olefins as with the olefins, the general rule holds that the closer the double bonds come to the center of a molecule or of a carbon chain the better the anti-knock quality becomes.

INTRODUCES 2-WAY GREASE GUN



Pleco two-way grease gun

Pacific Lubrication Engineering Company, Los Angeles, Cal., has recently introduced its new Pleco two-way grease gun.

It is claimed that this new gun is 50 per cent. lighter than the conventional gun of this type. Trigger control furnishes either a "shot" of grease or a steady stream under high pressure, the two-way feature.

There are only three operating mechanisms, each of which is replaceable. The numbers indicated in the illustration mark, (1) piston assembly, (2) removable cylinder, (3) ball check, (4) air trigger, (5) combination air inlet and exhaust valve, (6) continuous grease flow valve and trigger, (7) ball check, uniflow channel.

The price with 15 feet dual supply hose, 14 inches steel or fabricated h. p. hose and fittings is $65; with 50-pound portable tank complete, $95.

FORMS NEW DIVISION OF S. F. S. A.

A special engineering and metallurgical division has been formed within the Steel Founders Society of America in order that members may maintain close contact with the market promotion work that will be undertaken by the development engineering department of the society.

Eligibility to membership in this new division will be confined to two representatives from each member foundry, who are to be engineer-designers, metallurgists, or both. The division will be operated along lines similar to the other divisions of the society, there being no added dues or fees in connection with membership.

Membership is by appointment only, each member foundry being entitled to appoint two delegates who shall be either engineers, designers or metallurgists.

Meetings of this division may be held in connection with the regular meetings of the society, or special meetings will be held should occasion require.

Cumulative New Commercial Car Registration Statistics, February, 1931

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising Service, Springfield, Ill., and New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J. Some of this data has been published previously, but it is given here complete for the convenience of our subscribers. Commercial car registrations do not include busses.

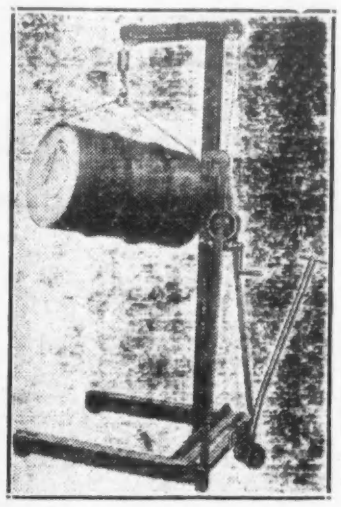
Comparative figures for February, 1930, will be found on Page 7.

Returns for today: Colorado and New York.

States	Autocar	Brockway-Indiana	Chevrolet	Diamond-T	Dodge	Essex	FWD	Fargo	Federal	Ford	G. M. C.	International	Mack	Paige	Relay	Reo	Republic	Rugby	Sterling	Stewart	Studebaker	Whippet	White	Willys	Willys-Knight	Miscellaneous	Totals	States
Alabama		4	97		2					83	1	11				1					1			1			201	Alabama
Arizona			26		7					60	1	9								1	3						107	Arizona
Arkansas			89		4					153		5	15			1											267	Arkansas
Calif.	4	3	304		98			1	5	856	25	17	5			26	5	6	8	2	13	1	16	4	2	74	1475	California
Colorado			98		18		2	1	5	174	9	29				6					4	1		4		7	358	Colorado
Conn.	3		71	4	22				7	129	3	11	7		2	10				4	7		6				286	Conn.
Delaware			24		1					30	2		1							1							59	Delaware
Florida		1	124		6					242	2	4				3							4			3	389	Florida
Idaho			36		4		1			51	2	3											1			1	99	Idaho
Illinois	10	5	382	36	70			1	9	646	23	142	11			18	1		2	5	13	4	2	13	1	45	1439	Illinois
Indiana		9	251	1	27		1	2		278	20	50	2			7				4	15	1	1	7		8	684	Indiana
Iowa		1	246		35		1	3		408	4	50	1			12					15		3	6		5	790	Iowa
Kentucky			145	2	15					146	5	32	8			3	1				7		1	3		5	373	Kentucky
Maine			69	1	19					118	2	5		1		2			2		3			3	1		226	Maine
Maryland		2	88	6	5				8	138	6	13	7			8				1	4	1	6	2		3	298	Maryland
Mass.	16	2	149	2	48			1	4	385	17	27	13	2		16			1	3	6	1	9		1	5	708	Mass'setts
Michigan			199		30				7	448	18	42	4	4	1	13	2	1			6	2	2	3		12	794	Michigan
Minn.			101		16		2		2	127	2	23			2	3	3	2			4	1	4	1	2	1	296	Minn.
Miss.			61		5			1		52		11				1											131	Miss.
Missouri	4	7	759	20	89	2		4	6	666	27	104	7	6		9	1	4	2	2	15	3	18	13	8	19	1795	Missouri
Montana			53		5			1		64	1	21				1	1	1		1				1		1	151	Montana
Nebraska			181	3	25			1		181	8	48	1			3				1	7		3	7		1	470	Nebraska
Nevada			13		2					22													1				38	Nevada
N. Hamp.			49	1	3				3	71	1	6				3				2	3		1				143	New Hamp
N. Jersey	8	5	186	8	44				4	364	15	41	8	3		13			7	2	6		16	2		19	751	N. Jersey
N. Mexico			36	1	1					56	2	9				3					1	2		1		1	113	N. Mexico
N. York	101	35	463	24	124	1		4	4	910	53	98	44	2	7	28		5	9	33	19		41	11	1	36	2053	New York
Nor. Car.			180		23					138	3	16	1								2		1	1		5	370	Nor. Car.
Nor. Dak.			35		5			1		30	1	17															89	Nor. Dak.
Ohio	1	6	277	3	46			6	2	497	22	57	4		1	8		5	2	4	36		16	13		15	1021	Ohio
Oregon	2		66		4		1		1	132	3	9	5				6		1		5		6			7	248	Oregon
Penna.	14	14	362	2	110			3	8	734	20	78	15	1	1	17		2	7	15	20	3	16	17	1	18	1478	Penna.
Rho. Isl.	2		24		7				8	74	2	3	1			6					5		1	1			134	Rho. Isl.
S. Car.		1	114		8					99	1	10	1			1							1			1	237	S. Carolina
S. Dakota			82	5	11		1			56		54				4					8			3	1		225	S. Dakota
Tennessee			70		5				5	64	1	5	1			1					2		1	1		1	157	Tennessee
Texas		7	448	6	43			1	3	545	12	122	4			11		1			1		8	2		20	1234	Texas
Utah			49		4					70	7	13	1			5					1		3			3	156	Utah
Vermont			19		4					37	3	9				1					1			1			75	Vermont
Virginia	2	1	395		32	1			1	369	11	30			3	3	2	1		1	3		6	2			863	Virginia
Wash'ton			75		14		1		1	161	9	8	5		10	3		1			10	1	3	1		20	323	Wash'ton
W. Va.	5	1	66		19	1				101	6	10				1					2		1	2		1	216	W. Virginia
Wisconsin			179	2	11		6	1	3	183	13	25	1			1			4	1	10	1		6		5	452	Wisconsin
Wyoming			33		5			1		46	2	6	1								1						95	Wyoming
Dist. of C.	4		22	3	1		1			66	5	3	1		1				1				1			3	112	Dis. of Col.
Totals	176	104	6796	130	1077	5	17	33	96	10260	370	1286	175	19	28	252	22	29	46	83	259	22	199	132	18	345	21979	Totals

Equipment - - - Development

LEWIS-SHEPARD ADDS FOUR NEW CRANES TO LINE



LEWIS-SHEPARD hinged-type portable crane

Lewis-Shepard Company, Watertown Station, Boston, Mass., has added an entirely new line of portable cranes to its list of mechanical handling equipment. These cranes are made in four types.

The manufacturer believes that the hinged type, illustrated herewith, will be the most popular. Both the boom and main upright are hinged. The advantage claimed for this type is that it can be taken through practically any doorway and yet can be used to the full height of the ceiling.

Other new machines are a telescopic type, a revolving hinged type, which will swing through an arc of 360 degrees, and a revolving telescopic type.

Each of these machines can be furnished with a hand worm drive winch, a hand spur drive winch and an electric drive winch. Air motor and gas engine can also be utilized.

An interesting feature of these cranes is that 90 per cent. of the mechanical parts are standard in the Lewis-Shepard line of Master stackers. Standard capacities are up to 2,000 pounds.

NEW BULLARD CHIEF ADVANCED WITH COMPANY

Edward C. Bullard, recently appointed general manager of the Bullard Company, Bridgeport, Conn., is the first of the third generation of the family to assume so important a position in the organization.

He is a native of Bridgeport, and his early education was in the Curtis School of Brookfield and in the University School of Bridgeport, where he prepared for Yale (Sheffield) Scientific School, from which he graduated in 1917 with honors.

After familiarizing himself by actual contact with the duties of the several divisions of the Bullard Company plant, he was made assistant to his father, Dudley B. Bullard, chief engineer, in 1926. Three years later he was appointed an engineer in charge of design and research, and in 1930 was elected a vice-president of the company.

He is the oldest grandson of the

EDWARD C. BULLARD

founder of the Bullard Company, Edward Payson Bullard.

Announcement of Mr. Bullard's appointment appeared in the April 1 edition of the Automotive Daily News.

OSLO CAR IMPORTERS TO HOLD SHOW IN MAY

Washington, April 2.—The Ohio Automobile Importers Association has definitely announced the holding of the third annual automobile show during the month of May.

LANDIS APPOINTED CHIEF ENGINEER OF LINCOLN ELECTRIC

Announcement is made of the advancement of George G. Landis to chief engineer of the Lincoln Electric Company, Cleveland, O., manufacturers of Stable-Arc Welders and Linc-Weld motors.

Engineer Landis is a graduate of Ohio State University, where he completed the course in electrical engineering, receiving the degree of Bachelor of Science in Electrical Engineering. Upon graduation, he entered the employ of the General Electric Company, where he engaged in the design of small motors. He later went to the Westinghouse Electric Company as sales engineer for central station equipment. Mr. Landis came to the Lincoln Electric Company eight years ago, when he was placed in charge of the company's experimental activities. He was later placed in charge of electrical design of both motors and arc welders, and some time afterward was placed in charge of mechanical design. Many of the patents held by his employers, both on arc welding equipment and electric motors, are the result of his ingenious efforts.

H. K. STAHL COMPANY OPENS NEW OFFICE IN ST. PAUL

St. Paul, Minn., April 2.—The H. K. Stahl Company, pioneer St. Paul manufacturer and distributor of petroleum products, has opened new offices at 24 to 29 University Ave.

WISCONSIN AXLES

Heavy loads, high speeds, rough roads—these arduous operating conditions determine the exacting specifications to which Wisconsin Axles must conform.

WISCONSIN AXLE CO.
Oshkosh Wisconsin

Cumulative New Commercial Car Registration Statistics, February, 1930

This table is repeated for comparative purposes only. February, 1931, figures will be found on Page 6.

States	Autocar	Brockway-Indiana	Chevrolet	Diamond-T	Dodge	Essex	FWD.	Fargo	Federal	Ford	G. M. C.	International	Mack	Paige	Relay	Reo	Republic	Rugby	Sterling	Stewart	Studebaker	Whippet	White	Willys	Willys-Knight	Miscellaneous	Totals	States
Ala., 1930			280		7			1		228	6	18	6			2					2	1	6	1		1	559	Ala., 1930
Ariz., '30			51		13					91	3	5	1			4											168	Ariz., 1930
Ark., 1930		1	101		10				1	126		25									1	1		2			268	Ark., 1930
Cal., 1930	8		342	1	96	3		10	12	1005	33	27	21		1	62	3	3	16	4	11	4	15	2		84	1763	Cal., 1930
Col., 1930		1	119		19	2		1		176	13	22				1		3				1	6	11		1	376	Col., 1930
Conn., '30	1		86	12	24	5		2	3	162	4	18	8		1	16				8	2	1	4		1	7	365	Conn., '30
Del., 1930	3	3	37		2					39	1	3	1			5										2	96	Del., 1930
Fla., 1930		10	253		19	2			3	393	6	31	5			12		1				8	8	1		3	755	Fla., 1930
Idaho, '30	1		36		4					52	2	3				4		1				1	1				105	Idaho, '30
Ill., 1930	10	12	676	87	88	1		21	20	747	21	217	16			35	4	3	10	4		29	16		3	121	2141	Ill., 1930
Ind., 1930		26	440	10	54	1		4	3	489	28	88	1		4	21		1		10	9	9	5	12	2	4	1221	Ind., 1930
Iowa, '30			299		9	1		1		235	6	64	5			14		3				1	1	7	3	3	652	Iowa, 1930
Ky., 1930		11	247		22	1		4	2	265	15	52				12		1			2	5	6	4	1	5	655	Ky., 1930
Maine, '30			72		8	1				59		6	1			7			2			1		1		1	159	Me., 1930
Md., 1930	12	5	139	3	11	1		1	3	212	3	17	3			8	2		1	3	1	1	8	2		16	452	Md., 1930
Mass., '30	17	5	126	12	43	8		8	3	309	25	43	14			13			2	5	4	4	12			7	660	Mass., '30
Mich., '30	3		354		33	5		6	5	713	29	41	2		1	21	7			1	2	2	4	4	1	17	1251	Mich., '30
Minn., '30		3	122	1	22	1		2	8	279	10	47	4		1	12	1	2			2	7	5	6		1	536	Minn., '30
Miss., '30		1	193		10					257	5	26				1						6	3				502	Miss., 1930
Mo., 1930	6	9	769	28	104			8	29	954	45	142	10		2	47	1	7	3	1	5	28	29	14	4	39	2284	Mo., 1930
Mont., '30			57		9			1		117	6	37	1			1					1	1					231	Mont., '30
Neb., 1930			252	1	18			2	1	254	12	52	4			9					1	4		5	1	3	619	Neb., 1930
Nev., 1930			7		3				1	24	5	2														1	43	Nev., 1930
N. H., '30		3	23		6				1	35		3				1				1					1	1	75	N. H., '30
N. J., '30	7	18	313	18	56	1		3	5	439	17	19	26			16		3	4	1	2	1	10		3	38	1000	N. J., 1930
N. M., '30			38		1					39	1	4										2		1			86	N. M., '30
N. Y., '30	14	62	547	18	87	6		18	13	1007	38	85	80		3	41			15	54	11	8	49	7	3	38	2204	N. Y., 1930
N. C., '30	2		201		15	1		1		196	6	17	2			1		2				3	1	2	1	1	452	N. C., 1930
N. D., '30			38		2			2		41	1	29				4					1	2		3			123	N. D., 1930
Ohio, '30	18	4	350		52	6		4	3	557	15	73	5		2	30	1	4		8	4	16	35	5	3	29	1224	Ohio, 1930
Ore., '30		1	78		21			2	5	170	6	13	8			6	2	3	1		2	2	3		1	7	331	Ore., 1930
Pa., 1930	21	32	480	7	112	3		10	10	808	53	94	43		8	38	5	7	9	39	4	22	25	5	4	33	1872	Pa., 1930
R. I., '30	8	1	27		9				1	58	4	5	3			6							4			1	127	R. I., 1930
S. C., '30			101		2	1		2	1	107	1	10	1				1	2					1				230	S. C., 1930
S. D., '30		1	96		12			1		105	3	65	2			11		1			1			7	1	6	312	S. D., 1930
Tenn., '30			131		20	1		1	1	132	7	15	1			5		2		2	1	2				4	325	Ten., 1930
Texas, '30	1	6	869	1	58	4		13	3	1063	23	183	4		3	29		8			6	13	18	15	3	47	2370	Texas, 1930
Utah, '30			27		3					59	1	11	2			5							1				109	Utah, 1930
Vt., 1930		1	27		4				1	35	2	3				2						4	1				80	Vt., 1930
Va., 1930		5	377		20			1	3	318	9	36				9	2	1		3		2	4	9	5	12	816	Va., 1930
Wash., '30			86		12			5	2	164	7	24	2			4		5	2		2		5	2		19	341	Wash., '30
W. V., '30			90	1	14			2	1	123	7	11				7	1				2	3	3			2	267	W. V., '30
Wis., '30		1	277	6	26			5	4	310	14	42	1			16	1	2	8	4	3	4	1	7		16	748	Wis., 1930
Wyo., '30			17		5			2		52		11				1		2				1		1			92	Wyo., 1930
D. C., '30	1		15		3					43	4	1	1						1	1			2			3	75	D. C., 1930
Totals	133	222	9266	206	1168	55	*	144	148	13047	497	1740	284	*	26	539	31	67	74	149	82	200	292	136	41	573	29120	Totals

*Carried in the Miscellaneous Column.

JENKINS IN STUDEBAKER SEEKS NEW HILL RECORDS

South Bend, April 2.—What is said to be the most determined and best organized assault on hill climbing records in history is about to be undertaken by Abe Jenkins, famous racing driver, in a free-wheeling Studebaker President roadster.

Starting from Washington, D. C., Jenkins will make an extensive tour of the country in an attempt to break every American hill climbing record of importance. He will be accompanied throughout the trip by representatives of the American Automobile Association, who will have complete charge of the car, and will supervise the hill climbing feats and certify the results.

The Studebaker President eight roadster was selected at random from the salesroom floor of a Studebaker dealer by A. A. A. representatives. It was then purchased from the dealer by Mr. Jenkins and turned over to the custody of the American Automobile Association.

REO OF NEW ENGLAND OPENS NEW STATION

Boston, Mass., April 2.—One of the most complete one-stop service stations in this section has just been opened by the Reo Motor Company of New England on Commonwealth Avenue at Amory Street. The service offered covers every kind of repairs, Duco spray-painting, upholstering, battery work, welding, greasing, oiling, brakes, fenders and sheet metal work, as well as washing and polishing. The station is located in a two-level building with light on all four sides and a ramp from floor to floor. A modern parts depot has been installed.

DALLAS GROUP ELECTS WRIGHT PRESIDENT

Dallas, Tex., April 2.—Members of the Dallas Automotive Supply and Service Federation elected Barton Wright, president of the organization, to succeed L. W. Barnett. Other officers are: Vice-president, L. W. Barnett; treasurer, J. M. Egan; directors, repair division, L. K. Autry; jobbers' division, F. B. Ellaison; battery, Gail A. Robinson; filling station owners, Carl Forster.

LEE TIRE SALES NOW CHARLES W. KREIG COMPANY

Newark, N. J., April 2.—The name of the Lee Tire Sales Company, local distrbiutor for Lee tires, has been changed to the Charles W. Kreig Company, Inc., and is located at 52 Dickerson St., Newark. The change in the firm name is in line with the policy of expansion recently adopted by the company. In addition to the tire business and Prest-O-Lite storage batteries, the company now handles Prest-O-Lite small tanks and appliances, Purox welding and cutting equipment, Allen electrical equipment and Whitaker battery cables. The company, under its original name, was formed in 1913.

GOODRICH STATION AT ST. PAUL EXPANDING

St. Paul, Minn., April 2.—A new $15,000 addition to the Goodrich-Silverton, Inc., service station at 6th and Exchange Streets, will be ready for occupancy by May 1, H. A. MacMillan, manager, has announced. The new structure, which is 60 by 90 feet, will double the space now occupied by the firm. A stock salesroom at 9th and Robert Streets will be removed to the 6th Street location on completion of the addition, Mr. MacMillan said.

GATES CO. ESTABLISHES NEW EASTERN TERMINAL

Hoboken, N. J., April 2.—The Gates Company, Inc., of Denver, dealer in products of rubber, has established its Eastern distributing center in Hudson county by leasing, for a term of years, one-half of the sixth floor in unit F, Hoboken Terminal Building, 15th Street, Hoboken. Arthur J. Ockelmann, Eastern manager, represented the rubber company in the negotiations.

BUY WELDING CONCERN

Spirit Lake, Ia., April 2.—Frank Hensiek and J. H. Barrett, Fairmont, Mont., have purchased the Auto Service Welding Company business from J. A. Kelsey and Harry Toops and taken over the business.

Major Specifications and Mechanical Details of 1931 Commercial Cars

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	No. of Cyls.	Bore and Stroke	Tax H. P.	Max. Brake H. P. at Specified R. P. M.	Oil System	Carburetor	Fuel Feed	Ignit. System	Gear Set	Location	No. Spds. For	Rear Axle	Final Drive	Reduction in Low	Brakes, Foot	Brakes, Hand	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Rear
*Am La France Chief	2½	3650	Own	6	3⅜x5	33.7	65@2100	Pw	Str	Vac	DR	Own	C	4	Tim	Wo	31.2	4	D	156	6200	32x6	32x6D
*Am. La Fr. Chieft'n	3-4	5500	Own	6	4¼x5½	40.8	75@1800	Pw	Zen	Vac	DR	Own	C	4	Tim	Wo	28.8	4	D	175	7200	S36x8	36x8D
Am. La Fr. Big Chief	6	6725	Own	6	4½x6	48.6	50@1200	Pw	Zen	Vac	DR	Own	C	4	Own	2R	32.8	4W	D	226	10600	S40x8	S40x8D
Austin	—	475	Own	4	2.2x3	7.8	——	CS	Til	—	Aut	W-G	U	3	Sal	Sp	—	4	4	75	——	3 75x18	3.75x18
Autocar A	1½-2	3300	Own	6	4 x4¾	38.4	82@2400	Pw	Str	Vac	DR	Br-L 51	U	4	Own	Sp	27.9	4V	R	150	5060	34x7	34x7
Autocar D	2-2½	3500	Own	6	4 x4¾	38.4	82@2400	Pw	Str	Vac	DR	Br-L 51	U	4	Own	2R	33.5	4V	R	150	5300	34x7	34x7D
*Autocar SH	2½-3	4300	Own	6	4¼x4¾	43.4	92@2400	Pw	Str	Gra	DR	Own T	U	4	Own	2R	44.0	RV	R	114	6770	34x7	34x7D
Autocar SCH	2½-3	4300	Own	6	4¼x4¾	43.4	92@2400	Pw	Str	Vac	DR	Own T	U	4	Own	2R	44.0	RV	D	157	6860	34x7	34x7D
*Autocar H	3	4100	Own	4	4½x5½	32.4	45@1450	CS	Str	Gra	DR	Own T	U	4	Own	2R	48.6	RV	R	114	6770	34x7	34x7D
*Autocar HS	3½	4600	Own	4	4½x5½	32.4	45@1450	CS	Str	Gra	DR	Own T	U	4	Own	2R	54.3	RV	R	114	7900	40x8	40x8D
*Autocar SHS	3-3½	4800	Own	6	4¼x4¾	43.4	92@2400	Pw	Str	Gra	DR	Own T	U	4	Own	2R	54.3	RV	R	114	7900	40x8	40x8D
*Autocar SCHS	3-3½	4800	Own	6	4¼x4¾	43.4	92@2400	Pw	Str	Vac	DR	Own T	U	4	Own	2R	54.3	RV	D	157	8180	40x8	40x8D
Autocar TEA	3-3½	5350	Own	6	4¼x4¾	43.4	92@2400	Pw	Str	Vac	DR	Own T	U	12	Own	2R	101.1	4V	D	192	8900	36x8	36x8D
Autocar TFA	3½-5	6100	Own	6	4½x4¾	48.6	101@2400	Pw	Str	Vac	DR	Own T	U	12	Own	2R	101.3	4V	D	192	9300	38x9	38x9D
Autocar C	3½-5	5500	Own	6	4½x4¾	48.6	101@2400	Pw	Str	Vac	DR	Own B	C	4	Own	2R	61.7	RV	D	172	9500	42x9	42x9D
Autocar CG	5	8250	Own	6	4½x4¾	48.6	101@2400	Pw	Str	Vac	DR	Own B	C	12	Tim	Wo	120	WB	D	196	13000	36x8	36x8B
Autocar F	7½	6800	Own	6	4½x4¾	48.6	101@2400	Pw	Str	Vac	DR	Br-L 70	C	7	Tim	Wo	94.0	4V	D	173	11000	36x7S	40x8DS
Autocar G	10	9000	Own	6	4½x4¾	48.6	101@2400	Pw	Str	Vac	DR	Br-L 70	C	7	Tim	Wo	100	WB	D	171	13000	36x8	36x8D
Brockway 60	*6000	995	Con	6	3⅜x4	27.3	61@3000	Pb	Zen	P	Aut	W-G	U	3	Col	Sp	19.8	4	Tr	132	3200	30x5	30x5
Brockway 65	6500	1195	Con	6	3⅜x4⅝	27.3	65@2700	Pb	Zen	Vac	Aut	Br-L	U	3	Col	Sp	21.3	4	Tr	137	3400	30x5	30x5
Brockway 75	7500	1290	Con	6	3⅜x4⅝	27.3	65@2700	Pb	Zen	Vac	Aut	Br-L	U	4	Col	Sp	25.6	4	Tr	137	3450	32x6	32x6
Brockway 90	9000	1525	Con	6	3⅜x4⅝	27.3	65@2700	Pb	Zen	Vac	Aut	Br-L	U	4	Col	Sp	20.9	4	Tr	149	3650	32x6	32x6
Brockway 120	12000	1990	Con	6	4 x4½	38.4	73@2400	Pb	Zen	P	Aut	Br-L	U	4	Tim	Sp	31.3	4H	Tr	156	5200	32x6	32x6D
Brockway 140	14000	2495	Con	6	4 x4½	38.4	73@2400	Pb	Zen	P	Aut	Br-L	U	4	Wis	2R	35.3	4HV	D	156	5500	32x6	32x6D
Brockway 141	17000	2935	Con	6	4 x4½	38.4	73@2400	Pb	Zen	P	Aut	Br-L	U	4	Wis	2R	46.2	4HV	D	170	6200	32x6	32x6D
Brockway 170	17000	3160	Con	6	4¼x4¾	40.8	89@2400	Pb	Zen	P	Aut	Br-L	U	4	Wis	2R	46.6	4HV	D	170	6800	32x6	32x6D
Brockway 175	17500	3660	Con	6	4¼x4¾	45.9	100@2400	Pb	Zen	P	Aut	—	U	5	Wis	2R	45.3	4HV	D	170	7200	34x7	34x7D
Brockway 195	19500	3820	Con	6	4¼x4¾	40.8	89@2400	Pb	Zen	P	Aut	Br-L	U	4	Wis	2R	49.5	4HV	D	170	7500	34x7	34x7D
Brockway 190	19000	4185	Con	6	4½x4¾	40.8	89@2400	Pb	Zen	P	Aut	Br-L	C	7	Tim	Wo	78.6	RV	D	168½	7625	34x7	34x7D
Brockway 220	22000	4560	Con	6	4⅝x4¾	45.9	100@2400	Pb	Zen	P	Aut	Br-L	U	4	Wis	3R	50.7	4HV	D	170	8200	36x8	36x8D
Brockway 250	25000	5350	Con	6	4⅝x4¾	45.9	100@2400	Pb	Zen	P	Aut	Br-L	U	4	Tim	Wo	63.7	4Hmv	D	182	10000	40x8	40x8D
Brockway 290	30000	7250	Con	6	4¾x5¾	54.15	116@1800	Pw	Str	P	L-N	Br-L	C	7	Tim	Wo	95.0	4W	D	182	10750	38x7P	40x14S
*Brockway 640	40000	9700	Con	6	4¾x5¾	54.15	116@1800	Pw	Str	P	L-N	Br-L	C	7	Tim	Wo	90.9	4W	D	212	14000	38x7P	36x10S
Chevrolet	½	355	Own	6	3⅛x3¾	26.3	50@2600	CS	Car	P	DR	Own	U	3	Own	Sp	13.61	4	R	109	1880	4.75x19	4.75x19
Chevrolet	1½	590	Own	6	3⅛x3¾	26.3	50@2600	CS	Car	P	DR	Own	U	4	Own	Sp	33.46	4	R	157	2890	30x5	30x5D
Chevrolet	1½	520	Own	6	3⅛x3¾	26.3	50@2600	CS	Car	P	DR	Own	U	4	Own	Sp	33.46	4	R	131	2560	30x5	32x6
Commerce Series S 11	1	1600	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Col	Sp	25.5	4	D	142	3900	P30x5	P30x5
Commerce Series S 11	1½	1900	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	D	162	4300	P30x5	DP30x5
Commerce Series 40	1½	2990	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4700	P34x5	DP34x5
Commerce Series S 11	2	2030	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	D	162	4500	32x6P	32x6D
Commerce Series 40	2	3240	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4900	32x6	36x6D
Commerce Series 40	2½	3240	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	5100	36x6P	36x6D
Commerce Series 60	2½	4580	Bud B A 6	6	4⅛x5½	40.8	83@2100	Pb	Zen	Vac	Aut	Ful	U	5	Tim	Wo	63.0	4	D	175	7000	36x6P	36x6D
Commerce Series 60	3	4680	Bud B A 6	6	4⅛x5½	40.8	83@2100	Pb	Zen	Vac	Aut	Ful	U	5	Tim	Wo	63.0	4	D	175	7100	36x6P	38x7D
Commerce Series 80	3½	5250	Bud B A 6	6	4⅛x5½	40.8	83@2100	Pb	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	B	D	175	8200	36x6S	36x12S
Commerce Series 80	4	5330	Bud B A 6	6	4⅛x5½	40.8	83@2100	Pb	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	B	D	175	8400	36x6S	36x14S
Commerce Series 100	5	5830	Bud B A 6	6	4⅛x5½	40.8	83@2100	Pb	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	95.0	B	D	175	9600	36x6S	40x14S
Day Elder 60	1	1195	Con 25 A	6	3⅜x4	27.3	61@3000	Pw	Zen	P	DR	W-G	U	4	Tim	Sp	36.3	4	4	135	3200	20x6.00B	20x6.50B
Day Elder 85	1½	1645	Con 16 C	6	3⅜x4⅝	27.3	65@2700	Pw	Zen	P	DR	W-G	U	4	Tim	Sp	42.3	4	4	135	3750	20x6.00B	20x6.50DB
Day Elder 110	2	2095	Con 16 C	6	3⅜x4⅝	27.3	65@2700	Pw	Zen	P	DR	Br-L	U	4	Tim	Sp	44.9	4	D	156	4600	20x7.00B	20x7.00DB
Day Elder 130	2½	2895	Con 16 R	6	4 x4½	38.4	73@2400	Pw	Zen	P	DR	Br-L	U	4	Tim	Sp	40.7	4	D	150	6400	20x7.50B	20x7.50DB
Day Elder 160	3	3695	Con 18 R	6	4 x4½	38.4	82@2400	Pw	Zen	P	DR	Br-L	U	4	Tim	Wo	36.1	4	D	156	6600	20x7.50B	20x9.00DB
Day Elder 200	4	4295	Con 18 R	6	4 x4½	38.4	82@2400	Pw	Zen	P	DR	Br-L	U	4	Tim	Wo	43.5	4	D	156	7400	20x9.00B	20x9.00B
Day Elder 240	5	5500	Con 21 R	6	4⅜x4¾	45.9	100@2600	Pw	Zen	Vac	DR	Br-L	C	4	Tim	Wo	50.6	4	D	162	9300	38x9P	38x9DP
Day Elder 285	8	6000	Con 21 R	6	4⅜x4¾	45.9	100@2600	Pw	Zen	Vac	DR	Br-L	C	7	Tim	Wo	71.2	6	D	164	12000	20x8.25B	20x8.25DB
Day Elder 345	10	7500	Con 21 R	6	4⅜x4¾	45.9	100@2600	Pw	Zen	Vac	DR	Br-L	C	7	Tim	Wo	79.9	4	D	164	12500	20x9.00B	20x9.00DB
Day Elder 402	12	9000	Con 16 H	6	4¾x5¾	54.2	127@2300	Pw	Zen	P	DR	Br-L	C	7	Tim	Wo	84.6	4	D	164	14000	20x9 75B	20x9.75DB
Diamond T 216	1	695	Her JXA	6	3⅜x4½	27.3	——	Pb	Zen	P	Aut	W-G	U	4	Cla	Sp	—	4H	D	135¼	3130	20x6.50B	20x6.50B
Diamond T 291	1½	1475	Her WXA 2	6	3½x4½	29.4	60@2400	Pb	Zen	P	Aut	Cov	U	4	Cla	Sp	—	4H	D	156¼	4400	20x6.50B	20x6.50DB
Diamond T 303	2	1745	Her WXB	6	3⅜x4½	33.7	67@2400	Pb	Zen	P	Aut	Cov	U	4	Cla	Sp	—	4HV	D	159¾	5000	20x7.00B	20x7.00DB
Diamond T 331	2½	2250	Her WXC	6	4 x4½	38.4	74@2400	Pb	Zen	P	Aut	Cov	U	4	Tim	Sp	—	4HV	D	168	5600	20x7.50B	20x7.50DB
Diamond T 504	2½	2675	Her WXC	6	4 x4½	38.4	74@2400	Pb	Zen	P	Aut	Cov	U	4	Wisc	2R	—	4HV	D	176½	6400	20x8.25B	20x8.25DB
Diamond T 506	2½	3000	Her WXC 2	6	4¼x4½	43.3	85@2200	Pb	Zen	P	Aut	Cov	U	5	Wisc	2R	—	4HV	D	184	6400	20x8.25B	20x8.25DB
Diamond T 603	3	3300	Her YXC	6	4⅜x4¾	45.9	94@2200	Pb	Zen	P	Aut	Cov	U	5	Wisc	2R	—	4HV	D	169	7500	20x9.00B	20x9.00DB
Diamond T 606	3	3440	Her YXC 2	6	4½x4¾	48.6	100@2200	Pb	Zen	P	Aut	Cov	U	5	Wisc	2R	—	4HV	D	187½	7500	20x9.00B	20x9.00DB
Diamond T 750	4	4800	Her YXC 4	6	4⅜x5½	51.3	——	Pb	Zen	P	Aut	Cov	C	5	Wisc	2R	—	4W	D	178	8300	22x9.75B	22x9.75DB
*Diamond T 801	4	4140	Her YXC	6	4⅜x4¾	45.9	94@2200	Pb	Zen	P	Aut	Br-L	C	7	Tim	Wo	—	6HV	D	189½	8300	36x8P	4P 36x8
*Diamond T 1200	6	5600	Her YXC 2	6	4½x4¾	48.6	100@2200	Pb	Zen	P	Aut	Br-L	C	7	Tim	Wo	—	4RW	D	190	11000	34x7P	4wh 34x7D
*Diamond T 1600	8	6220	Her YXC 3	6	4⅝x4¾	51.3	104@2400	Pb	Zen	P	Aut	Br-L	C	7	Tim	Wo	—	4RW	D	190	11700	36x8P	4wh 36x8D
*Diamond T 1601	8	7500	Wak 6RB	6	5 x5¾	60.0	127@2000	Pb	Zen	P	Aut	Br-L	C	7	Tim	Wo	—	4RW	D	194	12500	36x8P	4wh 36x8D
Dodge Bros. UF10	½	435	Own	4	3⅛x4¾	21.2	48@2800	Pb	Car	P	DR	Own	U	3	Own	Sp	14.28	4	D	109	1925	5.00x19	5.00x19
Dodge Bros F10	½	515	Own	6	3⅛x4½	23.4	61@3400	Pb	Car	P	DR	Own	U	3	Own	Sp	14.28	4	D	109	1975	5.25x19	5.25x19
Dodge Bros. U1	¾	695	Own	4	3⅛x4¼	21.3	45@2800	Pb	Car	Vac	NE	Own	U	3	Own	Sp	21.68	4	D	124	2260	5.50x20B	5.50x20B
Dodge Bros. DA1	¾	795	Own	6	3⅜x3⅞	27.3	63@3200	Pb	Zen	Vac	NE	Own	U	4	Own	Sp	36.83	4	D	124	2360	5.50x20	5.50x20
Dodge	1	795	Own	4	3⅛x4¼	21.0	45@2800	P	Car	Vac	NE	Own	—	3	Own	Sp	36.13	H	—	133	2590	6.00x20	32x6
Dodge	1	895	Own	6	3⅜x3⅞	27.3	63@3200	P	Zen	Vac	NE	Own	—	3	Own	Sp	33.45	H	—	133	2690	6.00x20	32x6
Dodge Bros. UF30	1½	595	Own	4	3⅛x4¾	21.0	48@2800	Pb	Car	P	DR	Own	U	4	Own	Sp	37.17	4	D	136	2581	6.00x20	32x6
Dodge Bros. F30	1½	695	Own	6	3½x4½	23.4	61@3400	Pb	Car	P	DR	Own	U	4	Own	Sp	37.17	4	D	136	2631	6.00x20	32x6
Dodge Bros. F35	1½	1425	Own	6	3⅜x3⅞	27.3	63@3200	Pb	Zen	P	DR	Own	U	4	Own	Sp	41.43	4	D	140	3780	6.00x20	6.00x20D
Dodge Bros. F36	1½	1485	Own	6	3⅜x3⅞	27.3	63@3200	Pb	Zen	P	DR	Own	U	4	Own	Sp	41.43	4	D	165	3972	6.00x20	6.00x20D
*Dodge Bros. F40	2	1995	Own	6	3⅝x5	31.5	96@3000	Pb	Zen	P	DR	Own	U	4	Own	Sp	43.75	4	D	150	5173	6.50x20	6.50x20D
*Dodge Bros. F41	2	2085	Own	6	3⅝x5	31.5	96@3000	Pb	Zen	P	DR	Own	U	4	Own	Sp	43.75	4	D	165	5211	6.50x20	6.50x20D
Dodge	3	1845	Own	6	3⅜x4½	27.3	78@3000	P	Zen	Vac	NE	Own	—	4	Own	Sp	46.31	H	—	135	4235	32x6	32x6D
Dodge	3	1895	Own	6	3⅜x4½	27.3	78@3000	P	Zen	Vac	NE	Own	—	4	Own	Sp	41.43	H	—	165	4820	32x6	32x6D
Dodge	3	1945	Own	6	3⅜x4½	27.3	78@3000	P	Zen	Vac	NE	Own	—	4	Own	Sp	46.31	H	—	185	4715	32x6	32x6D
Dodge Bros. F60	3	2645	Own	6	3⅝x5	31.5	96@3000	Pb	Zen	P	DR	Own	U	4	Own	Sp	48.87	4	D	146	5543	32x6	32x6D
*Dodge Bros. F61	3	2575	Own	6	3⅝x5	31.5	96@3000	Pb	Zen	P	DR	Own	U	4	Own	Sp	48.87	4	D	170	5789	32x6	32x6D
*Dodge Bros. F62	3	2695	Own	6	3⅝x5	31.5	96@3000	Pb	Zen	P	DR	Own	U	4	Own	Sp	48.87	4	D	195	5901	32x6	32x6D
Essex Commercial	¾	445	Own	6	2¾x4½	18.2	——	CS	Mar	Vac	Aut	Own	U	3	Own	Sp	17.8	4	4	110	1930	30x5	31x5.50
Federal D	1½	795	Con W 10	4	3⅞x4¼	24.0	48@2500	Pb	Zen	P	DR	W-G T9	U	4	Cla	Sp	40.8	4	Tr	131	3225	6.00x20	32x6
Federal E6	1½	895	Con 17 E	6	3⅜x4	27.3	60@2600	Pb	Zen	Vac	DR	W-G T9	U	4	Cla	Sp	34.6	4	Tr	132	3275	6.00x20	32x6
Federal F7	1½	1535	Con 16 C	6	3⅜x4⅝	27.3	64@2500	Pb	Zen	P	DR	Own	U	4	Tim	Sp	29.2	4	Tr	132	3765	30x5	30x5D
Federal A6	2	1855	Con 16 C	6	3⅜x4⅝	27.3	64@2500	Pb	Zen	Vac	DR	Own	C	4	Cla	Sp	36.5	4	Tr	151	4580	32x6	32x6D
Federal A6T	2½	2185	Con 16 C	6	3⅜x4⅝	27.3	64@2500	Pb	Zen	Vac	DR	Own	C	4	Tim	Sp	41.3	4	Tr	151	4950	32x6	32x6D
Federal A6TW	2½	2360	Con 16 C	6	3⅜x4⅝	27.3	64@2500	Pb	Zen	Vac	DR	Own	C	4	Tim	Wo	42.0	4	Tr	151	4950	32x6	32x6D
*Federal 2DSW	2½-3	1050	Con W 10	4	3⅞x4¼	24.0	48@2500	Pb	Zen	P	DR	W-G T9	U	4	Cla	Sp	40.8	4	Tr	140	3925	6.00x20	32x6
*Federal 2ESW	2½-3	1150	Con 17 E	6	3⅜x4	27.3	60@2600	Pb	Zen	Vac	DR	W-G T9	U	4	Cla	Sp	40.8	4	Tr	145	3980	6.00x20	32x6
Federal T10B	2½-3	2740	Con 16 R	6	4 x4½	38.4	75@2200	Pb	Zen	P	DR	Own	C	4	Tim	Sp	44.5	4	Tr	165	6550	34x7	34x7D
Federal T10W	2½-3	2915	Con 16 R	6	4 x4½	38.4	75@2200	Pb	Zen	P	DR	Own	C	4	Tim	Wo	44.0	4	Tr	165	6550	34x7	34x7D
Federal U6	3-3½	3860	Con 18 R	6	4 x4½	38.4	85@2200	Pb	Str	P	DR	Br-L 55	C	7	Tim	Wo	64.6	4	D	165	7220	34x7	34x7D
Federal 4C6A	4-5	4735	Con 20 R	6	4½x4¾	40.8	90@2200	Pb	Zen	P	DR	Br-L 55	C	7	Tim	Wo	72.2	4	D	192	8330	36x8	36x8D
Federal 4C6AB	4-5	4960	Con 20 R	6	4½x4¾	40.8	90@2200	Pb	Zen	P	DR	Br-L 55	C	7	Tim	Wo	72.2	4	D	192	8850	36x8	36x8D
*Federal U6SW	6	6000	Con 20 R	6	4½x4¾	40.8	90@2200	Pb	Zen	P	DR	Br-L 55	C	7	Tim	Wo	71.3	6	Tr	201	10300	34x7	34x7D
*Federal U6SWAB	6	6500	Con 20 R	6	4½x4¾	40.8	90@2200	Pb	Zen	Vac	DR	Br-L 55	C	7	Tim	Wo	71.3	6	Tr	201	10300	34x7	34x7D
Federal X6	7½	5085	Con B 7	4	5 x6	40.0	100@1350	Pw	Zen	Vac	AB	Br-L 60	C	7	Tim	Wo	110.9	R	D	162	9750	36x6S	40x14S
Federal X8R	7½	5810	Con 21 R	6	4⅜x4¾	45.9	100@2200	Pb	Zen	P	DR	Br-L 60	C	7	Tim	Wo	110.9	R	D	162	10000	40x8	40x8D
*Federal 4C6SW	8	7500	Con 21 R	6	4⅜x4¾	45.9	100@2200	Pb	Zen	P	DR	Br-L 55	C	7	Tim	Wo	80.8	6	Tr	231	12380	36x8	36x8D
Ford AA	1½	495	Own	4	3⅞x4¼	24.0	40@2200	Sp	Zen	Gra	Own	Own	U	4	Own	St	42.24	4	R	131½	2723	6.00x20	32x6
Ford AA	1½	525	Own	4	3⅞x4¼	24.0	40@2200	Sp	Zen	Gra	Own	Own	U	4	Own	St	42.24	4	R	157	2811	6.00x20	6.00x20
F W D—H	1½	3325	Wis S U	4	4 x5	25.6	50@2000	Pb	Zen	Vac	Eis	Cotta	C	4	Own	St	38.1	4	R	121	5300	34x7	34x7
F W D—H6	2	3425	Wak	6	3¾x4¾	33.7	72@2500	Pb	Zen	Vac	Eis	Br-L	U	4	Own	St	35.0	4	R	133	5500	34x7	34x7
F W D—BTL	2	3900	Wak	6	3¾x4¾	33.7	72@2500	Pb	Zen	Vac	Eis	Br-L	C	7	Own	St	84.7	4	R	137½	6000	36x8	36x8
F W D—HH6	2½	4000	Wak	6	3¾x4¾	33.7	72@2500	Pb	Zen	P	Eis	Br-L	C	7	Own	St	101.0	4	R	138	6400	36x8	36x8
F W D—B	3	4200	Own	4	4¾x5½	36.1	56@1350	Pb	Str	Gra	Eis	Own	C	3	Own	St	35.6	4	R	124	6460	36x6S	36x6S
F W D—BT	3-3½	4742	Wak	6	4⅛x5½	40.8	92@2300	Pb	Zen	Vac	Eis	Own	C	5	Own	St	101.0	4	R	137¾	7700	40x7S	40x5SD
F W D—CU6	3½	5120	Wak	6	4⅛x5½	40.8	92@2300	Pb	Zen	Vac	Eis	Own	C	5	Own	St	86.6	4	R	148	7500	38x9	38x9
F W D—SSU	4	5220	Wak	6	4⅜x5½	45.9	102@2200	Pb	Zen	Vac	Eis	Own	C	5	Own	St	86.6	4	R	148	7600	38x9	38x9
F W D—M5	5	7600	Wak	6	4⅜x5½	45.9	102@2200	P	Zen	P	Aut	Br-L	U	8	Wis	2R	193.1	4V	4-D	165	11800	12.75x20B	12.75x20B
*F W D—X6	6	6500	Wak	6	4⅜x5½	45.9	102@2200	Pb	Zen	Vac	Eis	Own	C	5	Own	St	86.6	4	R	170	9500	36x8	36x8
F W D—M7	7½	8700	Wak	6	5 x5¾	60	127@2000	P	Zen	P	Aut	Br-L	U	8	Wis	2R	193.1	4V	4-D	165	13000	40x10P	40x10DP
Garford Series S 11	1	1600	Bud H S 6	6

Major Specifications and Mechanical Details of 1931 Commercial Cars

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	No. of Cyls.	Bore and Stroke	Tax H. P.	Max. Brake H. P. at Specified R. P. M.	Oil System	Carburetor	Fuel Feed	Ignit. System	Gear Set	Location	No. Spds. For.	Rear Axle	Final Drive	Reduction in Low	Brakes, Foot	Brakes, Hand	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Rear
†Gramm CX	2	1095	Con W-11	4	4½x4¼	27.2	55@2600	Pb	Til	P	Aut	W-G	U	4	Tim	Sp	37	4	D	131	3300	6.50x20	6.50x20D
Gramm CX	2	1295	Con 16 C	6	3⅜x4⅜	27.3	70@3000	Pb	Til	P	Aut	W-G	U	4	Tim	Sp	37	4	D	131	3300	6.50x20	6.50x20D
*Gramm D	2½	1995	Lyc ASD	6	3⅜x4½	33.7	90@2200	Pb	Zen	P	Aut	Cov	U	4	Tim	Sp	33	4	D	160	5100	7.50x20	7.50x20D
*Gramm E	3	2595	Lyc TS	6	3⅞x5	36	90@2200	Pb	Zen	P	Aut	Cov	U	4	Tim	Sp	35	4	D	160	5500	8.25x20	8.25x20D
*Gramm EY	3	3595	Con 20 R	6	4½x4¾	40.80	90@2200	Pb	Zen	P	Aut	Cov	U	4	Tim	Sp	30	4	D	190	6750	7.50x20	7.50x20D
*Gramm T-38	3	3595	Lyc TS	6	3⅞x5	36	90@2200	Pb	Zen	P	Aut	Ful	U	4	Wis	2R	45	D	R	153	7200	36x5S	36x10S
*Gramm O-45	4	3995	Lyc TS	6	3⅞x5	36	85@2200	Pb	Zen	P	Aut	Ful	C	8	Wis	2R	75.8	D	R	153	7700	36x5S	36x12S
*Gramm GY	4	4345	Con 21 R	6	4⅜x4¾	45.9	100@2200	Pb	Zen	P	Aut	Cov	U	4	Wis	2R	28	4	D	210	7200	8.25x20	8.25x20D
Gramm GW	4	5175	Con 21 R	6	4⅜x4¾	45.9	100@2200	Pb	Zen	P	Aut	Cov	U	4	Wis	2R	—	4W	D	157	8900	9.00x20	9.00x20D
*Gramm O-60	5	4745	Lyc TS	6	3⅞x5	36	—	Pb	Zen	P	Aut	Ful	C	8	Wis	2R	78.4	D	R	153	8800	36x6S	36x14S
*Gramm HY	5	6545	Con 16 H	6	4¼x5¾	54.15	127@2300	Pb	Zen	P	Aut	Ful	U	4	Wis	2R	25.2	4	D	236	9600	36x8	36x8D
Indiana 60		*6000	995	Con	6	3⅜x4	27.3	61@3000	Pb	Str	P	Aut	W-G	U	3	Col	Sp	19.8	4	Tr	132	3200	30x5	30x5
Indiana 64		6500	1195	Con	6	3⅜x4⅝	27.3	65@2700	Pb	Str	Vac	Aut	Br-L	U	3	Col	Sp	21.3	4	Tr	137	3400	30x5	30x5
Indiana 74		7500	1290	Con	6	3⅜x4⅝	27.3	65@2700	Pb	Str	Vac	Aut	Br-L	U	4	Col	Sp	25.6	4	Tr	137	3450	32x6	32x6
Indiana 89		9000	1525	Con	6	3⅜x4⅝	27.3	65@2700	Pb	Str	Vac	Aut	Br-L	U	4	Col	Sp	20.9	4	Tr	149	3650	32x6	32x6
Indiana 111 X W		12500	1850	Her	4	4 x5	25.6	46@2000	Pb	Str	Vac	Eis	Br-L	U	4	Wis	2R	35.2	R	Tr	120	3740	32x6	32x6D
Indiana 120		12000	1990	Con	6	4 x4½	38.4	73@2400	Pb	Str	P	Aut	Br-L	U	4	Tim	Sp	31.3	4H	Tr	156	5200	32x6	32x6L
Indiana 140		14000	2495	Con	6	4 x4⅛	38.4	73@2400	Pb	Str	P	Aut	Br-L	U	4	Wis	2R	35.3	4HV	D	156	5500	32x6	32x6L
Indiana 141		17000	2935	Con	6	4 x4⅛	38.4	73@2400	Pb	Str	P	Aut	Br-L	U	4	Wis	2R	46.2	4HV	D	170	6200	32x6	32x6L
Indiana 170		17000	3160	Con	6	4½x4¾	40.8	89@2400	Pb	Str	P	Aut	Br-L	U	4	Wis	2R	46.6	4HV	D	170	6800	32x6	32x6D
Indiana 175		17500	3660	Con	6	4⅜x4¾	45.9	100@2400	Pb	Str	P	Aut	—	U	5	Wis	2R	45.3	4HV	D	170	7200	34x7	34x7L
Indiana 195		19500	3820	Con	6	4½x4¾	40.8	89@2400	Pb	Str	P	Aut	Br-L	U	4	Wis	2R	49.5	4HV	D	170	7500	34x7	34x7L
Indiana 190		19000	4185	Con	6	4½x4¾	40.8	89@2400	Pb	Str	P	Aut	Br-L	C	7	Tim	Wo	78.6	RV	D	168½	7625	34x7	34x7D
Indiana 220		22500	4560	Con	6	4⅜x4¾	45.9	100@2400	Pb	Str	P	Aut	Br-L	U	4	Wis	2R	50.7	4HV	D	170	8200	36x8	36x8L
Indiana 250		25000	5950	Con	6	4⅜x4¾	45.9	100@2400	Pb	Str	P	Aut	Br-L	U	4	Tim	Wo	63.7	4HMV	D	182	10000	40x8	40x8D
Indiana 290		30000	7250	Con	6	4¾x5¾	54.1	116@1800	Pw	Str	P	L-N	Br-L	C	7	Tim	Wo	95.0	4W	D	182	10750	38x7P	40x14S
*Indiana 640		40000	9700	Con	6	4¾x5¾	54.1	116@1800	Pw	Str	P	L-N	Br-L	C	7	Tim	Wo	90.9	4W	D	212	14000	38x7P	36x10S
International AW1		¾	720	Wak X A	4	3½x4½	19.6	30@2700	Pb	Zen	Vac	DR	Mec	U	3	Own	Sp	17.4	4	2	136	2620	5.25x20	5.25x20
Internat'n'l Sp. Del.		¾	720	Wak X A	4	3½x4½	19.6	30@2700	Pb	Zen	Vac	DR	Mec	U	3	Eat	Sp	60.3	4	2	124	2200	5.25x30	5.25x30
Intern'l 6 Spd. Spec.		1	820	Wak X A	4	3½x4½	19.6	30@2700	Pb	Zen	Vac	DR	Mec	U	3	Eat	Sp	82.6	4	2	124	2430	30x5	30x5
International S24		1¼	1160	Lyc C T	4	3⅜x5	22.5	43@2350	Pw	Zen	Vac	DR	Own	U	3	Eat	Sp	21.3	4	2	130	3200	30x5	30x5
International S26		1¼	1320	Lyc 4 S L	6	3¼x4½	25.3	61@2800	Pb	Zen	Vac	DR	Own	U	3	Eat	Sp	21.3	4	2	130	3250	30x5	30x5
International AW2		1½	675	Wak X A	4	3½x4½	19.6	30@2700	Pb	Zen	Vac	DR	Mec	U	3	Own	Sp	60.3	4	2	136	2980	5.50x20	6.00x20
International SF34		1½	1450	Lyc C T	4	3⅜x5	22.1	43@2350	Pw	Zen	Vac	DR	Own	U	3	Eat	Sp	22.6	4	2	140	3520	30x5	32x6
International AL3		1½	1450	Lyc SLH	6	3¼x4½	25.3	61@2800	Pb	Zen	Vac	DR	W-G	U	4	Own	Sp	42.9	4	2	138	4300	6.00x20	6.00x20L
International SF36		1½	1600	Lyc 4 S L	6	3¼x4½	25.3	61@2800	Pb	Zen	Vac	DR	Own	U	3	Eat	Sp	22.6	4	2	140	3670	30x5	32x6
International SD44		2	1590	Lyc C T	4	3⅜x5	22.5	43@2350	Pw	Zen	Vac	AB	Own	U	4	Eat	Sp	40.6	4	2	117	3760	30x5	32x6
International SD46		2	1740	Lyc 4 S L	6	3¼x4½	25.3	61@2800	Pb	Zen	Vac	AB	Own	U	4	Eat	Sp	40.6	4	2	117	3750	30x5	32x6
International SF46		2	1950	Lyc 4 S L	6	3¼x4½	25.3	61@2800	Pb	Zen	Vac	DR	Own	U	4	Eat	Sp	40.6	4	2	140	4000	32x6	32x6D
International A4		2	1985	Own F B B	6	3⅜x4½	31.5	65@2800	Pb	Zen	Vac	DR	Own	U	5	Own	Sp	47.8	4	2	145	5000	32x6	32x6L
International HS54		2½	3850	Hall-S 151	4	4¼x5½	28.9	54@1800	Pb	Zen	Vac	RB	Own	U	5	Eat	2R	60.5	4	4	148	8000	36x5S	36x8S
International HS54C		2½	3850	Hall-S 151	4	4¼x5½	28.9	54@1800	Pb	Zen	Vac	RB	Own	U	5	Own	Ch	63.8	4	4	148	8665	36x5S	36x10S
International W1		2½	3850	Hall-S 151	4	4¼x5½	28.9	54@1800	Pb	Zen	Vac	RB	Own	U	5	Own	2R	60.5	4	2	148	8300	36x5S	36x8S
International A5		3	2550	Own F B B	6	3⅜x4½	31.5	65@2800	Pb	Zen	Vac	DR	Own	U	5	Own	Sp	52.6	4	2	156	5606	34x7	34x7D
International A6		3	2675	Own B B	6	3⅜x4½	31.5	65@2800	Pb	Zen	Vac	DR	Own	U	5	Own	Sp	62.5	4	2	156	5750	34x7	34x7L
International HS74		3½	4850	Hall-S 152	4	4¾x5½	36.1	60@1800	Pb	Zen	Vac	RB	Own	U	5	Eat	2R	70.5	4	4	160	10700	36x5S	40x12S
International HS74C		3½	4850	Hall-S 152	4	4¾x5½	36.1	60@1800	Pb	Zen	Vac	RB	Own	U	5	Own	Ch	79.1	4	4	160	11000	36x6S	40x12S
International W3		3½	4850	Hall-S 152	4	4¾x5½	36.1	60@1800	Pb	Zen	Vac	RB	Own	U	5	Own	2R	70.5	4	2	160	10125	36x6S	40x12S
Internat'n'l HS104C		5	5500	Hall-S 152	4	4¾x5½	36.1	60@1800	Pb	Zen	Vac	RB	Own	U	5	Own	Ch	90.5	4	4	160	11095	36x6S	40x14S
La France-Rep. A1		6000	795	Lyc	6	3 x4¾	21.5	60@2500	Pb	Zen	Vac	Aut	Ful	U	4	Tim	Sp	36.1	4	Tr	132	3000	5.50x20	32x6
La France-Rep. C1		7500	1295	Lyc	6	3¼x4½	25.4	61@2750	Pb	Zen	Vac	Aut	Ful	U	4	Tim	Sp	29.1	4	Tr	144	3300	6.00x20	32x6
La France-Rep. D1		9000	1595	Lyc	6	3¼x4½	25.4	61@2750	Pb	Zen	Vac	Aut	Ful	U	4	Tim	Sp	37.9	4	Tr	144	3725	30x5	30x5D
La France-Rep. F2		13000	2395	Lyc	6	3⅝x5	31.5	83@2800	Pb	Zen	Vac	Aut	Ful	U	4	Tim	Sp	40.1	4	D	174	5520	32x6	32x6D
La France-Rep. H2		16000	2985	Lyc	6	3⅞x5	36.0	80@2500	Pb	Zen	Vac	Aut	Ful	U	4	Wis	2R	4.16	4	D	174	6370	34x7	34x7D
La France-Rep. M2		20000	4000	Wak	6	4⅜x5½	46.0	97@2000	Pb	Zen	Vac	Aut	Ful	U	5	Wis	2R	48.1	4	D	174	7500	36x8	36x8D
La France-Rep. 35-2		24000	5600	Wak	6	4½x5¾	48.6	98@1850	Pb	Zen	Vac	Aut	Ful	U	4	Wis	2R	45.4	4	D	174	9250	38x9	38x9D
Maccar 36 A		1½	1900	Bud	6	3¾x4½	33.7	83@2800	—	Str	P	DR	Br-L	—	4	Tim	Sp	31.1	4	H	171	4850	32x6	32x6D
Maccar 40 A		2	2400	Bud	6	3¾x4½	33.7	83@2800	—	Str	P	DR	Br-L	—	4	Tim	Sp	40.6	4	H	171	5340	32x6	32x6D
Maccar 56		3	3350	Bud	6	3¾x5	33.7	72@2100	—	Str	Vac	DR	Br-L	—	4	Wis	2R	34.5	4	H	183	6200	34x7	34x7D
Maccar 60		4	3950	Bud	6	4⅛x5⅛	40.8	103@2100	—	Str	P	DR	Br-L	—	5	Tim	Wo	37.2	4	H	183	6600	20x9.00	20x9.00D
Maccar 66 A		4	5500	Her	6	4⅝x4¾	51.3	106@2100	—	Zen	P	DR	Br-L	—	7	Tim	Wo	86.7	4	W	206	8200	20x9.75	20x9.75D
Maccar 86 A		5	5950	Her	6	4⅝x4¾	51.3	106@2100	—	Zen	P	DR	Br-L	—	7	Tim	Wo	85.0	4	W	206	9500	20x10.50	20x10.50D
Mack BL		1	2800	Own	6	3¼x5	25.39	63@2800	Pw	Str	Vac	NE	Own	U	4	Own	Sp	Opt	4	D	148	——	B6.00x20	DB6.00x20
††Mack BG		1½	3000	Own	6	3⅝x5	31.57	75@2600	Pw	Str	Vac	NE	Own	U	4	Own	Sp	Opt	4	D	156	——	32x6	D32x6
Mack AB		2½-3	3950	Own	4	4¼x5	28.9	60@2200	Pb	Str	Gra	RB	Own	U	4	Own	2R	Opt	R	D	2-Opt	——	36x8S	36x8S
††Mack AB		2½-3	3500	Own	4	4¼x5	28.9	60@2200	Pb	Str	Gra	RB	Own	U	4	Own	Ch	Opt	R	D	2-Opt	——	36x8S	36x8S
Mack AB		2½-3	4750	Own	6	3⅝x5	31.57	75@2600	Pw	Str	Vac	NE	Own	U	4	Own	2R	Opt	R	D	2-Opt	——	34x7	D34x7
††Mack AB		2½-3	4300	Own	6	3⅝x5	31.57	75@2600	Pw	Str	Vac	NE	Own	U	4	Own	Ch	Opt	R	D	2-Opt	——	34x7	D34x7
††Mack B		3-4	5250	Own	6	4 x5½	38.4	100@2300	Pb	Str	Vac	NE	Own	U	4	Own	2R	Opt	4	D	2-Opt	——	36x8	D36x8
††Mack BC		3½-5	5600	Own	6	4 x5½	38.4	100@2300	Pb	Str	Vac	NE	Own	U	4	Own	Ch	Opt	4	D	2-Opt	——	36x8	36x8D
††Mack BJ		3½-5	6150	Own	6	4½x5½	48.6	126@2300	Pb	Str	Vac	L-N	Own	C	4	Own	2R	Opt	4	D	3-Opt	——	36x8	36x8D
††Mack AK		3½-5	5150	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	J	4	Own	Ch	Opt	4	J	3-Opt	——	36x5S	36x5DS
††Mack AK		3½-5	5250	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	C	4	Own	2R	Opt	4	D	3-Opt	——	36x5S	36x5DS
††Mack AC		3½-5	4950	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	J	4	Own	Ch	Opt	J	R	3-Opt	——	36x5S	40x10S
††Mack AK		3½-5	6450	Own	6	4½x5½	48.6	126@2200	Pb	Str	Vac	L-N	Own	C	4	Own	2R	Opt	4	D	3 Opt	——	10.50x22B	10.50x22DB
††Mack AC		5½-7	5500	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	J	4	Own	Ch	Opt	J	R	3-Opt	——	36x6S	40x12S
††Mack AC		5½-7	6550	Own	6	4½x5½	48.6	126@2200	Pb	Str	Vac	L-N	Own	J	4	Own	Ch	Opt	4	J	3 Opt	——	10.50x24B	10.50x24DB
††Mack AC		7½	6600	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	J	4	Own	Ch	Opt	J	R	3-Opt	——	36x7S	40x14S
††Mack AP		7½	9500	Own	4	5 x6	60.0	150@2000	Pb	Str	Gra	NE	Own	J	4	Own	Ch	Opt	R	J	191	——	36x7S	40x8DS
††Mack AC 6-wheel		10	7500	Own	4	5 x6	40.0	77@1800	Pb	Str	Gra	RB	Own	J	4	Own	Ch	Opt	4R	J	3-Opt	——	36x7S	40x12S
††Mack AP 6-wheel		10	12000	Own	6	5 x6	60.0	150@2000	Pb	Str	Gra	NE	Own	J	4	Own	Ch	Opt	4R	J	3-Opt	——	36x7	40x12S
Paige		½	*895	Own	6	3½x4½	23.44	66@3200	Pb	DL	P	DR	—	U	3	—	Sp	14.27	4	Tr	115	——	5.50x18B	5.50x18B
Pierce-Arrow PT		2	2950	Own	6	3¾x4½	33.5	70@2600	Pb	Zen	P	DR	Cla	U	4	Tim	Sp		4	W	160	5800	7.50x20B	7.50x20B
Pierce-Arrow PW		3	4150	Own	6	4⅛x4½	40.3	77@2400	Pb	Zen	P	DR	Cov	U	4	Tim	*We		4	W	150	6800	9.00x20B	9.00x20B
Pierce-Arrow PX		4	5375	Own	6	4⅝x4¾	51.3	103@2200	Pb	Zen	P	DR	Cov	C	4	Tim	We	—	—	—	160	9400	10.50x20B	10.50x20B
Pierce-Arrow PY		5	5950	Own	6	4⅝x4¾	51.34	103@2200	Pb	Zen	P	DR	Cov	C	4	Own	*We		4	W	160	10700	10.50x24B	10.50x24B
Pierce-Arrow PZ		8	8950	Own	6	4⅞x5¾	54.15	130@2000	Pb	Zen	P	DR	Own	C	4	Own	*We		4	W	168	12800	36x7B	40x16S
Relay Series 15 AA		¾	1370	Con 17 E	6	3⅜x4	27.3	52@2200	Pb	Str	Vac	Aut	W-G	U	4	Own	2R	38.4	4	D	131	3750	30x5P	30x5P
Relay Series 15 AB		1	1400	Con 17 E	6	3⅜x4	27.3	52@2200	Pb	Str	Vac	Aut	W-G	U	4	Own	2R	38.4	4	D	131	3800	P30x5	P30x5
Relay Series S 11		1	1700	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	25.5	4	D	142	4050	30x5P	30x5P
Relay Series S 11		1½	1900	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	30.0	4	D	162	4500	30x5DP	30x5DP
Relay Series 40		1½	2990	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	34.5	4	D	168	5300	34x5P	34x5DP
Relay Series 40		2	3240	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	34.5	4	D	168	5500	36x6	D36x6
Relay Series 50		2	3860	Bud D W 6	6	3⅜x5	33.7	73@2200	Pb	Zen	Vac	Aut	Br-L	U	5	Own	2R	58.5	4	D	161	6800	36x6	D36x6
Relay Series S 11		2	2030	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	30.0	4	D	162	4700	32x6P	32x6DP
Relay Series 40		2½	3275	Bud D S 6	6	3⅝x5	31.5	56@2000	Pb	Zen	Vac	Aut	Br-L	U	4	Own	2R	34.5	4	D	168	5700	36x6	D36x6
Relay Series 50		2½	4000	Bud D W 6	6	3⅜x5	33.7	73@2200	Pb	Zen	Vac	Aut	Br-L	U	5	Own	2R	58.5	4	D	161	7000	36x6	D38x7
Relay Series 60		2½	4555	Bud B A 6	6	4⅛x5⅛	40.8	83@2100	Pb	Zen	Vac	Aut	Ful	C	5	Own	2R	58.5	4	D	175	7350	36x6	D36x6
Relay Series 50		3	4130	Bud D W 6	6	3⅜x5	33.7	83@2100	Pb	Zen	Vac	Aut	Br-L	U	5	Own	2R	58.5	4	D	161	7200	36x6	D40x8
Relay Series 60		3	4595	Bud B A 6	6	4½x5⅛	40.8	83@2100	Pb	Zen	Vac	Aut	Ful	C	5	Own	2R	58.5	4	D	175	7500	36x6	D38x7
Relay Series 80		3	5170	Bud B A 6	6	4½x5⅛	40.8	83@2100	Pb	Zen	Vac	Aut	Cov	C	8	Own	2R	84.18	4	D	175	8400	36x6	S40x10
Relay Series 60		3½	4745	Bud B A 6	6	4½x5⅛	40.8	83@2100	Pb	Zen	Vac	Aut	Ful	C	5	Own	2R	58.5	4	D	175	7800	38x7	D40x8
Relay Series 80		3½	5330	Bud B A 6	6	4½x5⅛	40.8	83@2100	Pb	Zen	Vac	Aut	Cov	C	8	Own	2R	84.18	4	D	175	8600	36x6	S40x12
Relay Series 80		4	5380	Bud B A 6	6	4½x5⅛	40.8	83@2100	Pb	Zen	Vac	Aut	Cov	C	8	Own	2R	84.18	4	D	175	8800	38x7	S40x14
Relay Series 50 SW		5	5505	Bud D W 6	6	3⅜x5	33.7	83@2100	Pb	Zen	Vac	Aut	Br-L	U	5	Own	2R	64.7	6	D	152	8600	36x6P	36x6DP
Relay Series 100		5	6615	Con 21 R	6	4⅜x4¾	45.9	100@2200	Pb	Str	Vac	Aut	Ful	C	5	Own	2R	58.5	4	D	230	10000	9.00x24	D9.00x24
Relay Series 60 SW		7	6545	Bud B A 6	6	4¼x5⅛	40.8	100@2200	Pb	Zen	Vac	Aut	Ful	U	5	Own	2R	63.6	6	D	175	12000	38x7P	40x8DP
Relay 100 B		7½	6900	Bud G E 6	6	4¾x6	54.1	115@1000	Pb	Zen	P	Aut	Br-L	U	4	Own	2R	49.7	4	D	220	11200	9.75x24	9.75x24D
Reo 15 Junior		½	785	Con 19 E	6	3⅜x4	27.3	60@2800	Pw	Sch	P	DR	W-G	U	3	Sal	Sp	14.63	4	Tr	115	2290	6.00x18	6.00x18
Reo D F 129		1	1095	Own C A	6	3⅜x5	27.3	85@3200	Pw	Sch	Vac	DR	Own	U	3	Own	Sp	17.1	4	Tr	129	3050	6.00x20	32x6
Reo D F		1	1095	Own C A	6	3⅜x5	27.3	85@3200	Pw	Sch	Vac	DR	Own	U	3	Own	Sp	17.1	4	Tr	135	3200	6.00x20	32x6
Reo F A		1½	1295	Own	6	3⅜x5	27.3	70@2800	Pw	Sch	Vac	DR	Own	U	4	Own	Sp	34.32	4	Tr	137	3525	6.00x20	32x6
Reo F E		1½	1395	Own	6	3⅜x5	27.3	70@2800	Pw	Sch	Vac	DR	Own	U	4	Own	Sp	34.32	4	Tr	152	3700	6.00x20	32x6
Reo F F		1½	1395	Own	6	3⅜x5	27.3	70@2800	Pw	Sch	Vac	DR	Own	U	4	Own	Sp	34.32	4	Tr	156	3750	6.00x20	32x6
Reo F H		2	1595	Own	6	3⅜x5	27.3	70@2800	Pw	Sch	Vac	DR	Own	U	4	Own	Sp	37.6	4	Tr	142	4165	32x6	32x6D
Reo F C		2	1645	Own	6	3⅜x5	27.3	70@2800	Pw	Sch	Vac	DR	Own	U	4	Own	Sp	37.62	4	Tr	152	4025	32x6	32x6D
Reo F D		2	1745	Own	6	3⅜x5	27.3	70@2800	Pw	Sch	Vac	DR	Own	U	4	Own	Sp	37.62	4	Tr	168	4075	32x6	32x6D
Reo G A		3	2035	Own	6	3⅜x5	27.3	70@2800	Pw	Sch	Vac	DR	Own	U	4	Own	Sp	41.05	4	Tr	163	4625	32x6	32x6D
Reo G C		3	2140	Own	6	3⅜x5	27.3	70@2800	Pw	Sch	Vac	DR	Own	U	4	Own	Sp	41.05	4	Tr	179	4850	32x6	32x6D
Reo G D		3	2085	Own	6	3⅜x5	27.3	70@2800	Pw	Sch	Vac	DR	Own	U	4	Own	Sp	78.1	4	Tr	144	4570	32x6	32x6D
Reo G C S		3	2375	Own	6	3⅜x5	27.3	70@2800	Pw	Sch	Vac	DR	Own	U	4	Own	Sp	41.05	4	Tr	210	5320	32x6	32x6D
Reo G B		3	2290	Own C F	6	3⅜x5	27.3	70@2800	Pw	Sch	Vac	DR	Own	U	4	Own	Sp	40.52	4	Tr	179	——	7.50x20	7.50x20
Rugby 6-14		½	655	Con	6	3¼x4	25.4	58@3100	Pb	Str	P	Aut	Own	U	3	Own	Sp	15.6	4	4	——	2045	29x5	29x5
Rugby 6-15		1½	865	Con	6	3¼x4	25.4	58@3100	Pb	Str	P	Aut	Br-L	U	4	Sal	Sp	34.49	4	Tr	135	2850	5.50x20	30x5D
Selden 17 C		1½	1500	Con	6	3⅜x4	27.3	61@3000	Pb	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	142	3900	32x6	32x6
Selden 31? C		1½	1610	Con	6	3⅜x4⅝	27.34	65@2760	Pb	Str	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	142	3900	32x6	32x6
Selden 37 C		2	1935	Con	6	3⅜x4⅝	27.34	65@2760	Pb	Str	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	151	4800	32x6	32x6D
Selden 39 C		2½	2920	Con	6	4 x4⅛	38.4	72@2400	Pb	Str	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	164	5800	32x6	32x6D
Selden 47 C B		3	3785	Con	6	4 x4½	38.4	85@2400	Pb	Str	Vac	Aut	Br-L	U	4	Tim	Sp	—	4	D	171	7200	34x7	34x7D
Selden 47 C D		4	4435	Con	6	4 x4½	38.4	82@2400	Pb	Str	Vac	Aut	Br-L	U	5	Wis	2R	—	4	D	171	7600	36x8	36x8D
Selden 67 C		5	4975	Con	6	4⅜x4¾	45.94	100@2400	Pb	Str	Vac	Aut	Br-L	C	7	Wis	2R	—	4	D	171	8700	36x8	36x8D
Selden 77		7	7365	Con	6	4¾x5¾	54.15	127@2300	Pb	Str	Vac	Aut	Br-L	C	7	Wis	2R	—	4	D	178	11600	40x8	42x9D
Service Series S 11		1	1600	Bud H S 6	6	3⅜x4½	27.3	52@2200	Pb	Zen	Vac	Aut	Br-L	U	4	Col	Sp	25.5	4	D	142

Chevrolet Retail Car Sales Continue Upward Trend

FEBRUARY RETURNS SHOW GAIN OF 4.6%; DROP FROM '30 SMALL

NEW YORK, April 2.—Continuing in February the upturn in sales that developed in December and carried through January, registrations of new Chevrolet passenger cars in forty-two states and the District of Columbia in February amounted to 37,781 as against 36,117 in the same states in the preceding month, a gain of 4.6 per cent.

Registrations continued to make a favorable showing in relation to those of a year ago, comparing with 49,005 in February, 1930, a falling off of only 15 per cent.

In eight states and the District of Columbia, out of the forty two, Chevrolet retail sales in February of this year were greater than in the corresponding month of last year. These states and the comparative figures were:

Montana, 301 against 244; New Mexico, 114 to 98; North Dakota, 281 to 193; South Carolina, 436 to 424; Utah, 176 to 140; Vermont, 62 to 61; Virginia, 1,401 to 1,020; Wyoming, 129 to 92, and District of Columbia, 419 to 280. In Maine and New York February sales of Chevrolet were close to the 1930 levels.

For the first two months of this year Chevrolet registrations in ten states set up gains over the corresponding period of last year. These states were: Connecticut, 822 to 804; Maine, 177 to 175; Minnesota, 1,549 to 1,367; Montana, 545 to 505; Nevada, 94 to 86; New Jersey, 3,720 to 2,786; New Mexico, 332 to 237; New York, 6,170 to 5,756; North Dakota, 504 to 352; Wyoming, 219 to 198, and District of Columbia, 749 to 412. In Massachusetts, Vermont and Virginia Chevrolet sales were virtually the same as a year ago.

Following are registrations of new Chevrolet cars in the reporting states for February, as compared with the corresponding month of last year and with the preceding month:

	Feb. 1931	Feb. 1930	Jan. 1931
Alabama	367	733	360
Arizona	122	235	127
Arkansas	261	482	452
California	2,492	3,918	3,208
Connecticut	450	524	372
Delaware	103	120	92
Florida	667	1,172	1,210
Idaho	149	231	202
Illinois	2,569	3,416	3,046
Indiana	1,080	1,664	1,240
Iowa	1,324	1,723	1,058
Kentucky	717	847	832
Maine	106	109	71
Maryland	722	855	654
Massachusetts	951	1,205	876
Michigan	1,759	2,457	1,679
Minnesota	650	774	899
Mississippi	197	639	183
Missouri	3,485	4,011	772
Montana	301	244	244
Nebraska	945	1,207	1,230
Nevada	42	59	52
New Jersey	1,454	1,703	2,266
New Mexico	114	98	218
New York	3,391	3,584	2,779
North Carolina	571	639	591
North Dakota	281	193	223
Ohio	2,215	3,046	1,854
Oregon	359	733	474
Pennsylvania	2,479	2,977	1,885
Rhode Island	153	242	82
South Carolina	436	424	459
South Dakota	406	555	437
Tennessee	490	922	632
Texas	2,048	3,566	2,452
Utah	176	140	98
Vermont	62	61	33
Virginia	1,401	1,020	558
Washington	350	503	587
W. Virginia	338	424	303
Wisconsin	1,050	1,178	907
Wyoming	129	92	90
Dist. of Col.	419	280	330
Totals	37,781	49,005	36,117

Registrations of new Chevrolet cars in the first two months of this year, as compared with the corresponding period of 1930, follow:

	1931	1930
Alabama	727	1,622
Arizona	249	466
Arkansas	713	1,076
California	5,700	6,222
Connecticut	822	804
Delaware	195	215
Florida	1,877	2,142
Idaho	351	406
Illinois	5,615	6,556
Indiana	2,320	2,994
Iowa	2,382	2,974
Kentucky	1,549	1,690
Maine	177	175
Maryland	1,376	1,508
Massachusetts	1,827	1,832
Michigan	3,438	4,658
Minnesota	1,549	1,367
Mississippi	380	1,091
Missouri	4,257	4,790
Montana	545	505
Nebraska	2,175	2,584
Nevada	94	86
New Jersey	3,720	2,786
New Mexico	332	237
New York	6,170	5,756
North Carolina	1,162	1,389
North Dakota	504	352
Ohio	4,069	5,703
Oregon	833	925
Pennsylvania	4,364	4,730
Rhode Island	235	304
South Carolina	895	1,376
South Dakota	843	1,047
Tennessee	1,122	2,185
Texas	4,500	7,745
Utah	274	301
Vermont	95	95
Virgina	1,959	1,974
Washington	937	1,068
W. Virginia	641	849
Wisconsin	1,957	2,274
Wyoming	219	198
Dist. of Col.	749	442
Totals	73,898	87,499

SERVICE IS BEST SALESMAN, FORD DEALER AVERS

SO HIGHLY does the Sherlock Motor Company, Inc., Ford dealer, 53d Street and Baltimore Avenue, Philadelphia, regard service as a business builder that the slogan appearing on its stationary reads: "Our Service Is Our Best Salesman." And that is far from a "slam" at its sales force.

In obtaining service business, the company makes use of both monthly and quarterly postcard announcements; a letter sent to customers who have not called at the station for service for sixty days, which letter is followed by a personal call by the dealer himself in case it fails to get a response, and a letter following lubrication service operations on a customer's car, thanking him for his patronage.

All service customers' cards are kept in a small metal drawer file in the service department. A red tab on a customer's card indicates that a letter has been mailed to him following his absence from the service station for sixty days. A blue tab signifies that he has had miscellaneous repairs on his car and a yellow tab shows that he has had lubrication service and been thanked by letter for his custom.

The quarterly postcard is mailed so that the customer will bring his car in after the 21st of the mailing month, its purpose being largely to give seasonal service. Following is the text of the quarterly card sent out most recently:

Drive your Model "A" or "AA" Ford to our service station after March 21 and have the following repair work done:

Flush radiator thoroughly and refill.

Tighten all hose connections and examine for leaks.

Reset generator charging rate for summer driving.

Clean and adjust breaker points.

Sediment bulb and carburetor thoroughly cleaned.

Remove heater and winter front.

Clean and tighten battery terminals.

Change oil, refill with summer grade.

Drain transmission and refill with summer grade.

Clean and adjust spark plugs.

Adjust shock absorbers for summer driving.

The complete charge for the above repair work, including material, is $3.75.

A thousand of the foregoing cards were mailed out, and by March 31 ten customers had brought their cars in and had the work done. Enough necessary work, however, in addition to that offered, was found among this number, to increase materially the total amount taken in. Ordinarily an average of 5 per cent. of the customers receiving quarterly letters bring in their cars.

Major Specifications and Mechanical Details of 1931 Commercial Cars

(Continued from Page 9.)

Make and Model	Capacity—Tons or Lbs.	Chassis Price	Engine	No. of Cyl.	Bore and Stroke	Tax H. P.	Max. Brake H. P. Specified R. P. M.	Oil System	Carburetor	Fuel Feed	Ignit. System	Gear Set	Location	No. Spds. For.	Rear Axle	Final Drive	Reduction in Low	Brakes, Foot	Brakes, Hand	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Standard Tire Sizes Rear
Stewart 19 X	3½	3690	Lyc TS	6	3⅞x5	36.2	90@2750	Pw	Str	P	DR	Ful	C	12	Tim	Wo	105.1	4	D	165	7110	34x7	34x7D
Stewart 31 X	5	4990	Wak 6 RSL	6	4⅜x5½	45.6	100@2000	Pw	Str	P	DR	Ful	C	8	Tim	Wo	82.1	4	D	165	8440	36x6S	36x6SD
Stewart 27 X	6-7	5700	Wak 6 RSL	6	4⅜x5½	45.99	100@2000	Pw	Str	P	DR	Ful	U	8	Tim	Wo	93.81	4	D	165	9987	36x7	40x7D
Studebaker S-1	½	595	Own	6	3⅜x4½	27.3	—	Pb	Str	P	DR	W-G	U	3	Own	Sp	16.4	4	4	114	2330	5.25x19	5.25x19
Studebaker S-20	1½	695	Own	6	3½x4½	25.4	70@3200	Pb	Str	P	DR	W-G	U	4	Tim	Sp	36.2	4	4	130	2985	6.00x20	32x6
Studebaker S-30	1½	775	Own	6	3½x4½	25.4	70@3200	Pb	Str	P	DR	W-G	U	4	Tim	Sp	36.2	4	4	160	3140	6.00x20	32x6
Studebaker S-40	2	945	Own	6	3½x4½	25.4	70@3200	Pb	Str	P	DR	W-G	U	4	Tim	Sp	37.4	4	4	136	3775	6.50x20	6.50x20D
Studebaker S-50	2	895	Own	6	3½x4½	25.4	70@3200	Pb	Str	P	DR	W-G	U	4	Tim	Sp	37.4	4	4	148	3810	6.50x20	6.50x20D
Studebaker S-60	2	945	Own	6	3½x4½	25.4	70@3200	Pb	Str	P	DR	W-G	U	4	Tim	Sp	37.4	4	4	160	3850	6.50x20	6.50x20D
Studebaker GN-N	4000	1245	Own	6	3⅜x4½	27.3	70@3200	Pb	Str	P	DR	Cla	U	4	Cla	Sp	33.5	4	D	146	3265	30x5	32x6
Studebaker 88	12500	3295	Own	8	3½x4⅜	39.2	115@3200	Pb	Str	P	DR	Ful	U	4	Eat	Sp	24.6	4V	D	184	5200	7.50x20	7.50x20D
Studebaker 99	14000	3795	Own	8	3½x4⅜	39.2	115@3200	Pb	Str	P	DR	Ful	U	4	Eat	Sp	24.6	4V	D	184	5680	7.50x20	7.50x20D
White 15 B	—	1545	Own GKA	4	3¾x5½	22.5	31@1600	CS	Zen	Vac	L-N	Own	C	4	Own	Sp	18.6	R	R	133½	3402	30x5	30x5
White 160	—	1700	Own GRCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	19.5	4	Tr	138	4025	30x5	30x5
White 161	—	1850	Own GRCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	19.5	4	Tr	138	4290	34x7	34x7
White 60	—	1850	Own 2 A	6	3½x4½	29.4	54@2100	Pw	Zen	Vac	DR	Own	U	3	Own	Sp	17.8	4	Tr	138	3739	30x5	30x5D
White 162	—	1900	Own 6 RCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	19.5	4	Tr	138	4260	30x5	30x5D
*White 60K	—	2200	Own	6	3½x4½	29.4	—	—	Zen	—	L-N	—	—	3	—	—	—	4	Tr	112	5200	20x7.00B	20x7.00B
White 210	—	2300	Own 6 RCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	23.4	4	Tr	148	4875	30x5	30x5D
White 211	—	2425	Own 6 RCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	23.4	4	Tr	148	5110	32x6	32x6D
White 212	—	2700	Own 6 RCB	4	4 x5¾	25.6	45@1800	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	23.4	4	Tr	148	5230	34x7	34x7D
White 61	—	2450	Own 4 A	6	3¾x4½	33.7	61@2100	Pw	Zen	Vac	DR	Own	U	4	Own	Sp	23.4	4	D	148	4789	30x5	30x5D
White 56	—	3125	Own GRC	4	4 x5¾	25.6	45@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	Sp	26.2	R	D	165	5276	36x4S	36x7S
White 54 A	—	3750	Own GRB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	Sp	35.6	R	D	170	6438	36x5S	36x8S
White 54 AT	—	3875	Own 6 RB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	Sp	46.6	R	D	134	6227	36x5S	36x8S
White 620	—	4350	Own 3 A	6	4 x5¼	38.4	72@1800	Pw	Zen	P	DR	Own	U	4	Own	Sp	41.8	4V	D	157	7300	8.25x20B	8.25x20DB
White 58	—	4400	Own GRB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	IG	49.7	D	R	180	1797	36x5S	36x58D
White 65 K	—	4600	Own 3 A	6	4 x5¼	38.4	72@1800	Pw	Zen	P	DR	Own	U	4	Own	Sp	33.9	4V	D	180	7408	8.25x20B	8.25x20DB
White 55	—	4650	Own GRB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	IG	66.1	D	R	174	8737	36x5S	40x58D
White 621	—	4650	Own 3A	6	4 x5¼	38.4	72@1800	Pw	Zen	P	DR	Own	U	4	Own	Sp	41.8	4W	D	157	7700	9.00x20B	9.00x20DB
White 52 T	—	4700	Own GRB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	IG	76.5	D	R	129	8461	36x5S	40x58D
White 52	—	5100	Own GRB	4	4¼x5¾	28.9	54@1600	Pw	Zen	Vac	Eis	Own	U	4	Own	2R	58.4	D	R	174	9409	36x6S	40x12S
White 630	—	5000	Own 3 A	6	4 x5¼	38.4	72@1800	Pw	Zen	P	DR	Own	U	4	Own	Sp	41.4	4V	D	168	8500	9.00x20B	9.00x20DB
White 631	—	5750	Own 3A	6	4 x5¼	38.4	72@1800	Pw	Zen	P	DR	Own	U	4	Own	2R	56.9	4W	D	168	9000	9.00x20B	9.00x20DB
White 640	—	6100	Own 1 A B	6	4⅜x5¾	45.9	96@1800	Pw	Zen	P	L-N	Own	U	4	Own	Sp	33.9	4	D	180	9200	9.00x20B	9.00x30DB
White 641	—	6450	Own 1 AB	6	4⅜x5¾	45.9	96@1800	Pw	Zen	P	L-N	Own	U	4	Own	2R	48.9	4W	D	180	9700	9.25x20B	9.25x20DB
White 642	—	6750	Own 1 AB	6	4⅜x5¾	45.9	96@1800	Pw	Zen	P	L-N	Own	U	4	Own	2R	66.5	4W	D	180	10600	9.25x24B	9.25x24DB
White 643	—	6950	Own 1 AB	6	4⅜x5¾	45.9	96@1800	Pw	Zen	P	L-N	Own	U	4	Own	2R	66.5	4W	D	180	10900	10.50x24B	10.50x24DB
Willys Six C-113	½	395	Own C-113	6	3¼x3⅞	25.3	65@3400	Pw	Til	P	Aut	Own	U	3	Own	Sp	13.20	4	B	113	1872	5.00x19	5.00x19
Willys Six C-131	1½	595	Own C-131	6	3¼x3⅞	25.3	65@3400	Pw	Til	P	Aut	W-G	U	4	Cla	Sp	40.8	4	B	131	2625	5.50x20	6.00x32

GENERAL NOTATIONS

***†REFERENCE MARKS** apply to individual lines only and explanations are given under the subdivision for each company in the **"SPECIAL NOTATIONS."**

CAPACITIES given in this table are in tons or fractions of tons. *Shows maximum allowable gross weight in pounds

WHEEL BASES given are standard, but optional wheel bases are available in many cases.

ENGINE—Bud, Buda; Con, Continental; Her, Hercules; Kgt, Knight; Lyc, Lycoming; Wak, Waukesha; Wis, Wisconsin; Hall, American Car & Foundry.

LUBRICATION—Pb, pressure lubrication to main and connecting rod bearings; Pw, full pressure lubrication to all main, connecting rod and camshaft bearings, including wrist pins; CS, circulating splash; Sp, splash.

CARBURETOR—Car, Carter; Mar, Marvel; Sch, Wheeler-Schebler; Str, Stromberg; DL, Detroit Lubricator; Til, Tillotson; Zen, Zenith-Detroit.

FUEL FEED—Gra, Gravity; Vac, Vacuum tank; P, Fuel pump

IGNITION—AB, American-Bosch, Aut, Electric Auto-Lite; Eis, Eisemann; L-N, Leece-Neville; N-E, North East; RB, Robert Bosch; DR, Delco-Remy; Mag, Magneto

TRANSMISSION—Br, L, Brown-Lipe; Cov, Covert; Ful, Fuller; Mec, Mechanics Machine; Mun, Muncie; W-G, Warner Gear; Cotta Cotta Gear Company; Cla, Clark Equipment Company.

LOCATION—C, center, amid; U, in unit with engine; J, on jackshaft.

REAR AXLE—Cla, Clark Equipment; Col, Columbia; Eat, Eaton; Sal, Salisbury; Tim, Timken; Wis, Wisconsin.

FINAL DRIVE—IG, Internal gear; St Straight bevel; Sp, Spiral bevel; Wo, Worm; 2R, Double reduction; Ch, Chain; R Relay drive.

BRAKES—J, Jackshaft; R, Rear wheels; D, Drive shaft; 4, four-wheel; Tr, Transmission; V, Vacuum booster; W, Westinghouse air brake; B, Both front and rear wheels.

TIRES—B, Balloon; D, Dual; S, Solid; P, Pneumatic

SPECIAL NOTATIONS

AMERICAN-LA FRANCE

*Chief model also available as 2½-ton model, 34x7 tire, dual rear, weight 6,400. Price $2,900

Chieftain model also available as Dump Truck, 160-inch wheel base.

Balloon tires optional on Chief, Chieftain and Big Chief models.

AUTOCAR

*Engines in these models are located under the driver's seat.

BROCKWAY

*Six wheelers.

CHEVROLET

Utility model available on 131-inch wheel base with chassis weight of 2,760 pounds and equipped with dual rear wheels.

DAY ELDER

Additional standard wheel bases are available on different models as follows:—

60	156	200	165, 180, 204
85	156, 168	240	214
110	168, 186	285	216
130	165, 180, 204	345	216
160	165, 180, 204	402	216

DODGE

*Models F40, F41, F61 and F62 can be had with double drop frame.

DIAMOND T.

*Six wheelers.

Additional standard wheel bases available as follows:—

551	158	750	167, 192
504	166½	801	180½, 199¼
506	174	1200	174½, 180
803	157, 179	1600	174½, 180
606	177½	1601	184

F. W. D.

The BTL and BT models are special line construction trucks in which complete provision for mounting AT and T earth boring machine, winch, body and other line construction accessories is included in the standard chassis.

*Indicates six-wheel model.

Special power take-off transmission, which provides 3 power take-offs which may be operated in any transmission speed, optional on all models.

*Foot brake on X6 is a Bendix type, operating on all six wheels.

FEDERAL

*Six wheelers.

GRAMM

Series	Straight Rating	Wheel Base	Pay Load Range
AX 4	8,000	157	1 ton
AX 6	8,000	157	1 ton
BX 4	10,000	157	1½ ton
BX 6	10,000	157	1½ ton
CX 4	12,000	157-180	2 ton
CX 6	12,000	157-180	2 ton
B	12,000	157-174	1¾ ton
C	14,000	145-196	2 ton
D	17,000	145-196	2½ ton
E	20,000	146-196	3 ton
GW	28,000	157-240	4 ton

†Both the four and six cylinder are also offered in 157-inch wheelbase at $1,145 and $1,345, respectively.

GENERAL MOTORS TRUCK

*Capacity indicated is the Straight Rating (combined weight of chassis, body, equipment and payload) for which each chassis is designed and guaranteed to satisfactorily operate under average conditions. The size of the tires used does not affect this Straight Rating, but to secure maximum tire mileage it is suggested that the total gross weight be limited to a "recommended gross weight" for each tire equipment based on tire capacity. Prices cover base chassis and vary with wheelbase and tire combinations. The number of wheelbase lengths, tire types, range of "recommended gross weights" and resulting payload range (assuming nominal body allowance) for each model follows:—

Note: Models T-15 to T-60, inclusive, as well as Models TX and WX, are available for export only as coach chassis.

Model	Wheel Bases	Tire Types	Range of Rec. Gross Weights*	Payload Range
T-11	1	1	3800	½
T-15	3	10	4500- 6500	½-1½
T-17	2	8	5500- 6500	1-1½
T-19	3	22	6500- 8500	1½-2
T-25	3	17	6800- 9000	1½-2
T-26	4	..	8500-11000	2-3
T-30	3	15	10000-12500	2-3
TX-186½	Exp Coach		14000	...
WX-185	Exp Coach		14500	...
T-42	4	12	12000-15000	2½-4
T-44	4	12	12000-16000	3-4½
WX-215	Exp. Coach		17000	...
T-51	4	..	16500-19000	4-5½
T-55	4	..	16500-19000	4-5½
T-60	4	18	18500-22000	5-6½
T-61	4	..	19500-22000	5-6½
T-82	4	12	19000-24000	5-7
T-85	3	..	22000-26000	5-7
T-90	3	7	22000-28000	5-7½
T-95	3	..	28000-34000	7½-10
T-96	3	..	28000-34000	7½-10

Models T-90, T-95 and T-96 are six wheelers, the latter having one driven and one trailing axle. Optional rear axle gear ratios available for all models. Double reduction axles available for Models T-90, T-61 and T-82.

INDIANA

*Six wheelers.

MACK

Other wheel bases furnished on all truck models.

On 6-wheel jobs, 4 rear wheels driven by chains, foot brake on 4 rear wheels.

HYP—Hypoid drive, single reduction.

††Made also in tractor models.

PAIGE

*Price includes panel or screen body.

PIERCE-ARROW

*Optional final drive on Models PW, PY and PZ.

REO

Model 15 Junior can be had with 4-speed transmission at additional cost. Models 15 Junior, DF 129, DF, FA, FE and FF are available with dual wheels at additional cost.

SELDEN

Additional standard wheel bases are available on different models as follows:—

Model 37C	161 and 181
39C	177 and 190½
47CB, 47CD	151, 164 and 184
67C	151, 164, 184 and 198

STEWART

Models 30 and 30X can also be supplied in 110, 120 and 140-inch wheel base.

Models 40 and 40X can also be supplied in 110, 140 and 160-inch wheel base.

*Model J4X can be supplied in 135, 148, 160 and 176-inch wheel base.

Model 28X can be supplied in 130, 145, 160 and 176-inch wheel base.

Model 29XS can be supplied in 135, 160 and 176-inch wheel base

*Models 18X, 32X and 36X can be supplied in 148, 190 and 220-inch wheel base.

*Models 19X, 31X and 27X can be supplied in 148, 172, 190, 220 and 235-inch wheel base.

As optional equipment models 18X, 19X, 36X, 31X and 27X can be supplied with Timken dual reduction rear axle.

Model 38-8 and 38-6 can be supplied in 196, 224 and 241-inch wheel base and worm axle.

STUDEBAKER

*Capacity model GN-N is 4,000 pounds for body, cab, driver and payload.

Maximum gross load, chassis, body and payload for Models 77 and 88 is 12,500 lbs. and for Model 99 is 14,000 lbs.

‡Hand brake same as foot brake, standard. Hand brake on drive shaft, special equipment.

WHITE

*Price on Model 60K includes body.

Increasing the Mover's Profits With Trucks

IDLE TIME IS DEFINITE FACTOR IN OPERATING COST, SAYS G. M. REPORT

Automotive Daily News herewith presents the third in a series of nation-wide surveys of the truck-operating field conducted by the General Motors Truck Company, Pontiac, Mich. This article, the same as the two previous articles, is appearing serially. The report covers a survey of the furniture-moving field, and complete text of this report in pamphlet style is available at all General Motors Truck Comany dealer and distributorships.

ONE of the major truck problems encountered by moving and storage concerns is the fact that the moving business pays a profit on only forty to sixty days of the years, in the average community. During the remainder of the year, the trucks lose money or just break even. This situation is caused, of course, by extreme variations in the mover's volume of business. His trucks lose money because they are idle over long periods of dull business.

Idle time always is costly. Fixed costs—depreciation, interest, taxes, licenses, garage charges, and the like—continue whether the truck is working or is idle. And trucks, therefore, can earn maximum profits only when they accomplish a maximum amount of work during every working hour of every working day.

Two Types of Time Saving

Obviously, there are two ways to offset this loss arising from idle time. One way is to reduce the amount of idle truck time during the periods which normally are dull—a subject which will be discussed later in this report. The other is to increase the amount of work performed by the trucks during the days which already are profitable, when additional business is fairly easy to get. And the amount of work which trucks can accomplish on busy, profitable days can be increased in two ways:

By eliminating delays and time losses which reduce the work accomplished.

By planning and scheduling loads to get the maximum amount of work from each truck.

Perhaps the most important of these two means of increasing the work accomplished is that of eliminating lost time on busy days. Careful observation of scores of opera-

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WHY IDLE TIME IS COSTLY

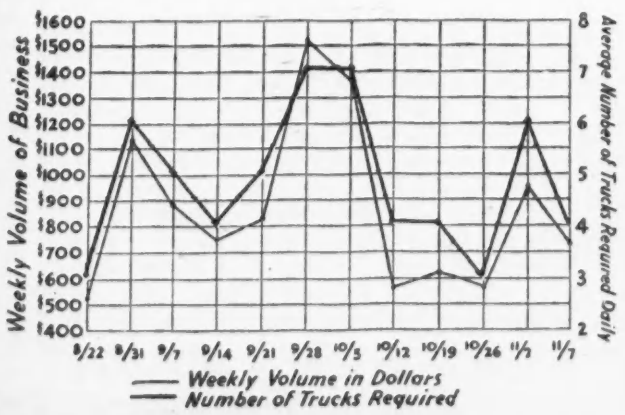
This record of fixed costs, from the books of a mover in the Middle West, provides a picture of the cost of idle time.

Annual Fixed Expenses	2-Ton Truck	3½-Ton Truck
Depreciation	$460.00	$555.00
Interest on Investment	79.65	116.89
Taxes	40.43	58.65
License	57.50	95.00
All Insurance	140.00	175.00
Garage (inc. Overhead)	240.00	240.00
Salary of Driver	1,500.00	1,800.00
	$2,517.58	$3,040.54
Fixed Cost per Day (300 working days per year)	$8.39	$10.14

Idle time eats up the mover's profits. Better management will reduce this loss.

THE EFFECT OF DULL PERIODS

This chart shows how one mover's volume varies before and after the October 1st peak and how the variations affect the movers' truck needs:



Methods of Preventing Time Losses

Cause of Lost Time

FAILURE TO HAVE LOADS READY

Movers' trucks often lose many minutes each day because outgoing loads at the warehouse are not ready for loading when the trucks are ready. A mover in New York state, who found that his trucks were losing an average of two hours a day from this cause, eliminated the delays by insisting upon close scheduling of all warehouse handling. Under this plan, each day's operations were listed and scheduled by early afternoon of the preceding day. Warehouse operations were then scheduled as follows: (1) All loads to go out first thing in the morning were assembled on the warehouse floor the previous afternoon. (2) Loads to go out later in the day were scheduled to be assembled complete, one-half hour before the estimated time of arrival of the truck. The warehouse superintendent estimated savings on some days of as much as six hours, after this plan went into effect.

CONGESTION AT THE LOADING DOCK

At many warehouses there is not sufficient room at the loading dock. As a result, trucks frequently are kept waiting until others are loaded and leave. In some cases, the cost of making alterations to overcome these delays would more than offset the value of the time savings. But in many other cases observed, truck delay from this source could have been eliminated by a few simple changes. Where congestion occurs frequently, it pays the mover to consider carefully the feasibility of making changes which will increase the available floor space or dock space.

DELAY IN CHECKING LOADS

A mover in the Middle West found that his trucks were losing an hour or more a day because there was provision for checking only one load at a time. To prevent this loss, the mover arranged for a bookkeeper in the office to assist in checking loads whenever necessary.

UNSUITABLE DOCK SET-UP

A mover in Illinois, operating eleven trucks, replaced five old jobs with new, low-bed van trucks. His loading platform was designed for trucks of normal height. The result was that each load on the new vans had to be handled twice in getting it in or out of the truck and up and down from the platform. In spite of the fact that warehouse delivery was scheduled for the old high-bed trucks whenever possible, delays from this source were costing an average of two hours a day of lost time on loads handled by the new vans. He remodeled a part of the platform with two resulting savings: (1) he was able to schedule warehouse loads more freely and thus step up his service, and (2) he eliminated the daily loss of costly time.

Reduces Delivery Costs Through Judicious Spending

Department Store Fleet Owner Buys 20 New Units, Trades in 10 and Repaints and Reconditions Balance And Puts Expert in Charge of Trucks

REDUCING delivery costs through judicious spending of money for twenty new truck units, repainting and thoroughly reconditioning the other sixty-seven trucks in the fleet, is the experience of the Kresge Department Store of Newark, N. J.

The important part an efficient, yet economical delivery system plays in a department store operation is stressed by Abraham Schindel, vice-president and general manager.

Mr. Schindel was instrumental in taking an obsolete fleet and within a year, with twenty new replacements, efficient repairs and expert handling, making it one of the most efficient.

"How important a delivery department is to a store and the scope of its operation has probably been a questionable argument of long standing," says Mr. Schindel. "What benefits are derived from its existence? How much should we spend for its operation? What should we do to improve the working conditions? Should we buy new equipment or repair the old? Should we uniform our drivers and helpers? How can we save operating expenses?

"These are but a few of the many problems confronting the store manager and the delivery superintendent.

"I could theorize at great length on ways and means of operating this department on a so-called economical basis, but in the final analysis each store, due to its geographical location, competition, etc., has problems and policies, which perhaps are not on a comparable basis with other stores.

"Most store executives have probably seen their delivery department increase with the growth of their store, having encountered the days of the horse-drawn vehicle, later the two-cylinder motorcar and now the general improvement in this mode of transportation. Few stores, however, had had the unique experience we have had at the Kresge Department Store in the last year. In that short space of time we have unquestionably satisfied ourselves that the only true economy in operation is effected by judicious spending.

"Picture a beautiful new modern store erected on the most important corner in the heart of the City of Newark, embodying every possibility and convenience for catering to the finest element in northern New Jersey. And further picture a so-called 'delivery department' housed in nothing more than an old garage—a fleet of nondescript trucks of various makes, designs, ages, colors, etc.—trucks parked in a garage so tightly that it was an impossibility to wash them. Drivers loading on the sidewalks in all kinds of weather and getting out on the road some time before noon. A shipping room with a number of belt conveyers and levels, which were entirely out of line for efficient operation. Future deliveries, held for instructions, charge drawbacks, check-offs and a multitude of other items added to the confusion. There was no definite route layout or route charts—there was only one router who knew how to route the packages, and Lord knows what would have happened if this fellow did not show up!

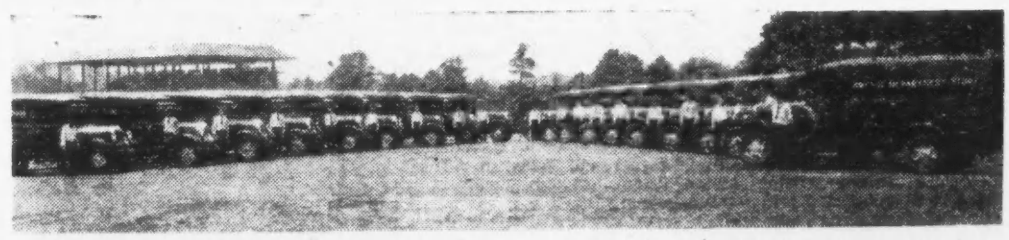
"To some places we made daily deliveries. To others once or twice a week. To some we only delivered in the summertime. There was no reserve equipment, and every time a large store promotion took place it was necessary to hire a fleet of extra trucks and drivers to help deliver the merchandise within two or three days, sometimes longer. These conditions may no doubt have been caused by a desire on the part of the previous management to effect a saving in this division by limiting all expenditures, but this method is often a more costly procedure.

"From our past experience with the customers we were endeavoring to serve, who for many years had been overserviced and had reached the point where the least deviation brought forth criticism, it was quite apparent that before we could make any great strides in upbuilding our store it would be necessary to start with the service divisions first. We immediately placed the delivery department in charge of a well-trained and capable manager, who proceeded to revamp the entire operation.

"The department was divided into the conventional internal division, external division, garage and maintenance division. In the internal division we revised our delivery territory to coincide with the territory covered by other stores in the city. To do this it was necessary to revise our schedule completely add 257 new towns, make daily deliveries to all points shown on the schedule and two deliveries per day to Newark and the adjacent suburban towns. Our next step was to do away with the sheet-writing system and introduce the stubbing system, an operation which in itself permitted an increase in efficiency and speed.

"Proper records were installed for a daily delivery summary, showing deliveries by routes divided between C. O. D. and paid and charge packages, morning and evening deliveries, etc. A town count was instituted to show deliveries to the various points on our schedule, and an

(Continued on Page 12)



NEW ADDITIONS TO KRESGE FLEET (above), composed of both Federal and Brockway, played an important part in reducing the cost of operation of the department store's delivery system

Fleet Operator Cuts Costs Through Judicious Spending

(Continued from Page 11)

efficient wrong address and future delivery system was installed.

"We also prepared several sets of routers' charts, showing the entire delivery territory, and the routes, streets and towns as shown on the schedule, so that, if it were necessary, most any one could be assigned to route packages without any preliminary training.

"Each stubber's bin was also equipped with a chart for the streets and towns on the particular route, to avoid packages being incorrectly stubbed requiring check-off by the drivers.

"In the external delivery we immediately proceeded to uniform our drivers, furnish them with change money and hold regular meetings every Monday morning, at which the problems of the delivery department were taken up with them, and at which a member of the store executive group or various heads would present some of the problems as developed in the store.

"It is perhaps unfortunate that the delivery man is too often overlooked by the busy store executive, thereby losing contact with the most important factor in its final representation to the customer. Keeping an intimate contact with this branch of the service brought about a most reactionary feeling so far as the morale of the drivers and helpers were concerned. For the first time they were made to realize the important position they played in the future of the store, and the change was quite sensational.

"In the garage and maintenance division all of the cars were put through the repair shop. A color combination was decided upon, and all cars were painted alike. An operating cost record was installed to give us a proper check on the cost of operating various types of cars, etc.

"By midsummer we decided to purchase twenty new one-ton package trucks, trading in ten of the most decrepit units. These major changes in the delivery department, together with similar improvements in the service divisions at the store, were so marked within a short period of time that they were noticed by our customers and became quite a topic of conversation. Before six months had passed our increase in deliveries was so large that we found it necessary to look for larger quarters, where we could continue to improve our layout and system to keep pace with the increasing volume and good will we were enjoying.

"We were fortunate in securing a building 100 feet wide by 480 feet long within two and a half miles of the store, located on one of the through highways, and giving us easy access in transporting merchandise from the store to this point. As the building was narrow, we could install only a one-sided operation. Profiting by our past experience, we installed a belt conveyor running from the center of the room in opposite directions, the unloading platform being located in the center.

"Stubbers' bins were installed alongside of the belt and drivers' bins directly in front, to which route cars were backed up to for loading. In order to facilitate the operation, our packages were resorted at the store in hampers from one to twenty-five and twenty-five to fifty, so that when the merchandise reaches the service building the lower-numbered routes are run through first on the one belt and the higher-numbered routes on the other.

"To permit additional route bins for sales periods, Christmas holiday, etc., we designed our drivers' bins to a width of five feet instead of the customary seven or eight feet. By doing so we have gained approximately twenty reserve bins.

"All of our cars are regularly assigned and parked directly in front of the route bin. Our drivers are assigned to the same car route, and, the entire building being steam heated, well ventilated and lighted, affords ideal loading conditions.

"At one end of the building, which is shaped in triangular form, we have installed work benches and an adequate repair shop. Also, a closed-in stockroom where all car parts are filed and indexed to be supplied to mechanics on requisition charging the car for which they are used.

"Directly opposite the internal delivery we have a section used for return room and cashiers and in another corner of the building we have a section properly protected for washing our equipment every night. Space is also provided for an office and for future package deliveries.

"Shortly after moving into this building we were able to secure 8,000 additional square feet in another wing adjoining our service building, which we took over for the storing of larger toys, house furnishings and china merchandise sold from floor samples. The sales checks are forwarded to this stock room, the order filled and sent directly into the delivery building for sorting on to the routes.

"It might appear that our delivery cost would have soared to exorbitant proportions; yet, in a final analysis of operating costs, we find the contrary to be true.

"Notwithstanding the major expenditures for twenty new vehicles purchased late in 1930, which would naturally show considerable increase in our depreciation figures, the expenditure for repainting and overhauling all of our old equipment, the procuring of new service building, paying rent for this building as well as for our old building for three months, uniforming our drivers, making the necessary installations in the new service building, car parts and shop tools, equipping our garage stockroom, increasing our daily mileage to practically double in order to cover the new territory, increasing our routes, which meant additional drivers and helpers, and, at the same time, handling an increase in deliveries of 10 per cent., we still affected a slight saving in our operating expense.

"How did we do it? In the first place, our change in system, placing our house in an orderly condition, enabled us to take care of the increased volume of business. By purchasing twenty new cars and trading in ten old ones, we were enabled to carry a reserve equipment for use during store promotions and during the Christmas holidays.

"By proper manipulation of routes we were able to carry through without finding it necessary to hire any outside equipment, which, at best, is an unfavorable condition. By taking advantage of market conditions, we were enabled to effect large savings on tires, tubes, also on gas and oil. Through our close contact with our drivers and fine morale existing in this division, our accidents decreased 33 per cent. Considering the increased number of vehicles operating and the mileage covered each day, this showing is quite remarkable.

"Our experience in the last year has proven to us conclusively that so-called 'savings' in cutting down the delivery department, restricting building changes, etc., are a poor economy.

"This department demonstrated its efficiency during the last Christmas season, when it was called upon to handle the greatest volume in the history of the store, by functioning without the slightest hesitation, with a minimum of complaints and returns, and rendered a service to our customers which has been reflected in the many letters of commendation.

"We are quite convinced that the delivery department is an integral part of our store organization."

BOULBOULLE TO HEAD GOODRICH IN ST. LOUIS

Akron, O., April 2 (UTPS).—Officials of the B. F. Goodrich Company announced today the appointment of W. J. Boulboulle as operations manager of the St. Louis district, effective April 9. Boulboulle has been manager of the office standards department here in Akron. L. D. Wrentmore, manager of the accounts payable department, will do special work in the office standards department. L. H. Roemisch of the cost department will replace Wrentmore.

U. S. RUBBER OFFERS LATEX BRAKE LINING

New York, April 2.—A new factor appeared in the brake-lining field on April 1, when the United States Rubber Company placed on the market a complete line of automobile and industrial brake-lining products. The distinguishing feature of the new line is that latex, the liquid form in which rubber comes from the rubber tree, is used as the bonding material. Laboratory tests are understood to have indicated certain superiorities for brake linings manufactured by this process. Each item will bear the brand name "Royal Master."

The new products have been developed by the fiber products department, but sales will be handled by a new brake-lining division of the tire department of the company.

DAYTON RUBBER ENTERS APRIL WITHOUT LET-UP

Dayton, O., April 2.—The Dayton Rubber Company entered April with its production unchanged from March schedule of 60 per cent. capacity, J. A. MacMillan, president, stated. Output will be increased in latter part of month, as business is on a decided upturn, Mr. MacMillan said. First quarter 1931 earnings were substantially above corresponding period of 1930, he added.

CLEVELAND EMPLOYMENT UP 25% IN TWO WEEKS

Cleveland, April 2.—Cleveland employment conditions improved 25 per cent in the last half of March from similar period in February, according to the State-City Free Employment Bureau.

NEW YORK LINCOLN SALES SET NEW FEBRUARY MARK

Detroit, April 2.—Deliveries of new Lincoln automobiles through the New York branch of Lincoln Motor Company in February exceeded all previous records for that month, totalling seventy-one cars as compared with sixty cars during February, 1930. The previous high record was sixty-seven retail deliveries in February 1928. March business is showing good volume. Retail deliveries through the New York branch during the first twenty days of March closely approximated the total for all of February.

GOODYEAR AWARDS SERVICE PLAQUE TO W. STEPHENS

Akron, O., April 2.—An unusual note in industrial relations was sounded in the inscription on a bronze plaque just presented to William Stephens, general superintendent of the Goodyear Tire and Rubber Company, commemorating thirty years of service with the company.

HERCULES MOTOR EARNS $387,812 IN YEAR 1930

Canton, O., April 2.—The Hercules Motor Company for the year ended December 31, 1930, reports net profit of $387,812 after depreciation and Federal taxes, equivalent to $1.24 a share, on 312,500 no-par shares of capital stock. This compares with net profit of $1,139,769, or $3.64 a share, in 1929.

NEW SERVICE GARAGE

Milwaukee, Wis., April 2.—William M. Marks, formerly proprietor of a 300-car garage in Chicago, has leased the North Third Street Garage here and will open about April 1 and operate as a storage garage with complete repair service, greasing and

INCREASING MOVERS PROFITS WITH TRUCKS

(Continued from Page 11)

tions indicates clearly that there are many of these losses. In general, they occur at three points:

1. **At the warehouse.**
2. **On the road.**
3. **In the repair shop.**

SAVING TRUCK TIME AT THE WAREHOUSE

MOVER'S trucks spend a high percentage of their time standing idle at the warehouse. Some of this idle time cannot be avoided, because loading and unloading requires considerable time. However, the survey showed clearly that, when loads must be handled at the warehouse, trucks frequently lose a great deal more time than is required to load or unload efficiently. This unnecessary idle time is costly, especially on rush days, and much of it can be avoided by careful management.

Workable methods which some movers have adopted to prevent delays in handling loads at the warehouse are described in the accompanying table.

Delays in loading and unloading usually exist because they are not recognized or because they do not seem serious. Every mover who is aiming at maximum profits should take steps to seek out these delays and eliminate them by methods similar to those described above.

(To be continued)

OFFICERS OF J. I. CASE RE-ELECTED BY DIRECTORS

Racine, Wis., April 2.—At meeting of directors of J. I. Case Company [illegible] re-elected.

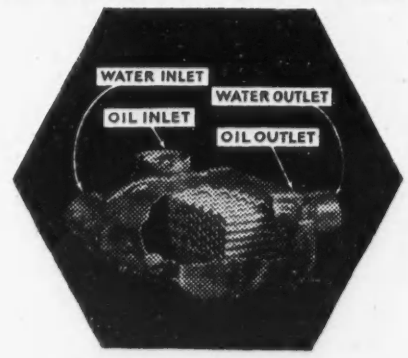
THE OUTSTANDING RECENT DEVELOPMENT IN AUTOMOTIVE ENGINEERNG

THE HARRISON VISCON

OIL TEMPERATURE REGULATOR

The VISCOSITY of oil depends on its TEMPERATURE—the Harrison VISCON, by regulating oil TEMPERATURE, controls oil VISCOSITY!

The Harrison Viscon—a miniature Harrison Radiator enclosed in a sturdy metal housing and connected with both the water cooling and the oil pressure lubricating systems—provides, for the first time, a simple, positive means of keeping the temperature of the oil within 15 or 20 degrees of the temperature of the water at the top of the radiator. This results in (1) a quicker oil warm-up in cold weather, (2) uniformly lower oil temperature in warm weather, and (3) more power and better lubrication all year 'round. The Harrison Viscon is adaptable to all types of gasoline engines and is available to manufacturers who are interested in improving the performance of their products.



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LOCKPORT, NEW YORK